The Journal of the American Medical Association

VOL. XXI. CHICAGO, JULY 15, 1893. No. 3.

ORIGINAL ARTICLES.

THE MEDICAL ASPECTS OF EMPYEMA.

Read before the Section on Practice of Medicine at the Annual Meeting of the American Medical Association.

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It has been the writer's fortune within the past three years to encounter, both in hospital service and consultation, a number of cases of purulent pleurisy following or complicating croupous pneumonia. In most instances the onset was so insidious or the symptoms so obscure and misleading that the recognition of the empyema was a surprise. Moreover, the symptomatology did not answer to the text book description. Generally the case was considered one of pneumonia with delayed or incomplete resolution. In all instances there were certain characters, both of the effusion and also of the symptoms, which impressed themselves strongly on the writer's mind, and he was led to believe purulent pleuritis is more frequently overlooked than need be. It seemed to him also, that this want of recognition was due to incorrect notions as to the etiology, symptomatology, diagnosis and prognosis of the disease, rather than to treatment, or in other words, the medical rather than the surgical aspects of the malady. At all events, it is only since the writer learned to appreciate the important truth that clinical distinctions rest upon bacteriological differences in the effusion, that his conception of empyema has lost much of the haziness still enveloping the subject in the literature and minds of the profession.

It is needless to go with special detail into the history and bibliography of suppurative pleurisy prior to the last ten years, since the real literature of this subject is contained in the medical journals that have appeared since 1885.

To illustrate the rather vague and general manner in which most text books deal with the disease, permit a few quotations from the four following, all of them leading and recent works:

In the eighth and last edition of Loomis' Practice, careful search failed to discover in his article on pleurisy either serous or purulent, any explicit statements regarding the dominant role played by microörganisms in the production and subsequent character of empyema. The date of his work is 1889, and hence its appearance antedated the most recent and instructive investigations of continental observers. In Frank Donaldson's article on this form of pleurisy, in Pepper's System of Medicine, third vol., 1885, there is the following reference to bacteria, in discussing the occurrence of empyema as a sequence of thoracentesis: "If the atmosphere admitted is contaminated by germs, we must acknowledge that such a result is possible." Furthermore, as to the association of empyema with the eruptive fevers he says, "It is doubtful whether their germs pass through the circulation or through the lymph canals, and produce local inflammation of the same nature as their own, or whether they render the pleura more sensitive to shocks of various kinds." Aside from these two sentences, his consideration of the etiology is limited, like that of Loomis, to a discussion of the disease as "primary and secondary," and its occurrence as a complication of infectious and septic diseases, such as scarlatina, typhoid fever, pyaemia, puerperal, septicæmia, etc. Strumpell also fails to speak in more than a general way of the influence of microörganisms in producing purulent inflammations in the course of septic and infectious constitutional affections, employing the vague term, "specific infection." In Wilson Fox's great and really valuable "Treatise on Diseases of the Lungs and Pleura," 1892, the author makes absolutely no allusion to bacteria in relation to the pleuritic exudation to the symptoms. The editor, however, Sydney Coupland, in a note on page 271, in speaking of Friedlander's pneumonia coccus mentions incidentally, "The subject has been still further extended by the detection of the Frænkel-Weichselbaum diplococcus in the inflammatory product of pleurisy . . . . when these diseases occurred as complications of, or sequellæ to, acute pneumonia and also independently of that affection." Osler emphasizes the etiological connection between empyema and certain infectious diseases, notably scarlatina. He comments moreover upon the "special attention" which of late years had been paid to the connection of pneumonia with empyema, and states that the bacteria are most frequently pneumococci or streptococci.

In describing the symptomatology of empyema most authorities fail wholly to distinguish clinical differences in accordance with differences in the character of the pus as determined by the microörganisms therein. Some deal with the subject in so general a way as to be quite unsatisfactory. Thus, Donaldson says, "In chronic purulent pleurisy the symptoms are somewhat different. It commences in a similar manner to that of acute pleurisy, with fever, but in a few days the fever disappears. In the evenings there may be some febrile reaction with slight chills. It is remarkable that frequently vast collections of purulent fluid do not give rise to chills." Loomis says the symptoms vary according to the character of the empyema, whether acute or chronic. "If the inflammatory products become gangrenous, the prostration is extreme, and the patient presents the appearance of one suffering from peritonitis; typhoid symptoms manifest them-

selves very early; and these cases usually terminate fatally within two or three weeks." . . . . "The symptoms of chronic empyema are often very obscure; the presence of pus in the pleural cavity in these cases can not be determined either by the rational symptoms or by physical signs." . . . "There is a gradual loss of flesh and strength; . . . . and there is an irregular diurnal chill followed by profuse sweats. If empyema occurs as a complication of septicæmia or pyæmia, its commencement is also, at times, very insidious." . . . . "not infrequently pyæmic patients make no complaints which would direct attention to the pleura, and the pleural cavity may be found two-thirds full of pus,without having given a single symptom of its presence." His only allusion to empyema in connection with lobar pneumonia apparently occurs in describing the morbid anatomy, as follows: "The cells in the pleuritic exudation are mainly pus." Strümpell says, "The fever is higher than in the other forms of pleurisy, but it is irregularly intermittent, and is often associated with chills. There are severe general symptoms besides the fever, such as great dullness, headache, and a dry tongue." Respecting the character of the fever in empyema Wilson Fox says, "In purulent effusions on the other hand, the fever may be low from the beginning, or if high at first may diminish in intensity and gradually cease, or a purulent effusion may be apyrexial during a long period of its course, and even the change of an effusion to a purulent character is not necessarily followed by a rise in temperature. Long continued fever of two or three months' duration, with occasional marked exacerbations is, however, in very many cases a symptom of purulent effusion, though not a positive indication of it." Osler states, "in very many cases" empyema "comes on insidiously" in the course of the primary affection or during convalescencc. He dismisses the subject of the symptomatology with a few brief sentences, contenting himself with but a few words concerning the fever, as follows: "Symptoms of septic infection are rarely wanting. If in a child, there is a gradually developing pallor and weakness; sweats occur, and there is irregular fever."

These few quotations, although by no means exhausting the works on general medicine and dis eases of the respiratory organs that might be cited, probably represent the views expressed in our most pretentious treatises, and with the exception of Coupland and Osler, the authors wrote before bacteriological and clinical observations throughout Europe had become fully proved and accepted.

Under the increased impetus imparted to bacterioscopic research by Koch's discovery of the tubercle bacillus in 1882, able and painstaking investigators began to delve in all directions. And it is interesting and instructive to see how their attention became year by year more and more directed to the study of exudations from the serous membranes, together with suppurative processes wherever encountered. Accordingly, studies into the character of empyema grew in frequency, as did also reports on the various and most approved methods of treatment. Indeed, the medical and surgical phases of the subject became so intimately mingled as to render difficult the separating one from the other, as is designed in this paper.

In 1886 Weichselbaum reported the discovery of streptococcus pyogenes in two cases of sero-fibrinous pleuritis, while in another of sero-purulent effusion this organism was found together with staphylococcus pyogenes. The next year appeared a report by Ehrlich of his bacteriological investigations in forty-five cases of pleuritic effusion, with special reference to the existence therein of bacillus tuberculosis. Of these, nine were empyemata, and in two of these he discovered the bacilli. His paper evoked extensive discussion by Frænkel, Israel, Gerhardt and others, inquiry being chiefly directed as to the conditions that favor the existence of bacilli in purulent, rather than serous pleuritic effusions. In 1888 Weichselbaum again made a report on his study of sero-fibrinous effusion following lobar pneumonia, and in this instance announced the discovery of the diplococcus pneumoniæ. In this same year Banti announced, in two cases of pericarditis with pleuritis following pneumonia, the discovery of the diplococcus in one, and in the other of this together with staphylococcus aureus and albus. Christmas-Dirckink-Holmfeld in investigating the bacteriology of abscesses found streptococcus pyogenes in three empyemas and Rosenbach's micrococcus pyogenes tenuis, in two empyemata associated with mastitis. Kracht also announced pus microbes in ten cases of empyema, as follows; In two, staphylococcus albus only; in two, only staphylococcus aureus; in one, streptococcus pyogenes; and in four staphylococcus albus and aureus together; in one, albus, aureus and citreus; and of these ten cases two would seem to have followed pneumonia. He furthermore carried out experiments on rabbits to determine the conditions governing the development of purulent exudations. From these he seems to have demonstrated that pus or other cocci are absolutely essential to the development of a purulent pleuritic effusion, and that there must be either previous injury of the membrane or the presence of a fluid capable of affording a suitable soil for their growth. Furthermore, supported by *post-mortem* examination of 151 cases he declared his conviction that catching cold exercised no influence whatever in the causation of an empyema.

But the most important contribution of that year to the medical aspects of empyema was made by Fraenkel. In his twelve cases which he divided into four groups, he identified bacteria as follows: first, three cases streptococcus pyogenes, it being uncertain whether or not a pneumonia had preceded; second, three cases that followed pneumonia—Fraenkel's diplococcus pneumonia; third, four cases in tuberculous subjects, in one bacilli in limited numbers, in one other streptococci. He concluded, therefore, with Rosenbach, Garre, Ouston, and others that, as in cold abscesses, tubercle bacilli are rare in this form of empyema, and that it is the spores which are present. In the two cases of the fourth group the empyema was due to the propagation of streptococci by the lymph channels from centers of infection situated at a distance. Certain of his conclusions are important to us, as follows:

1. The discovery of strepto- and staphylococci does not enable us to determine whether an empyema is primary or secondary, since it may be secondary to genuine croupous pneumonia, tuberculosis and centers of infection outside of the pleura.

2. Contrary wise, the existence of pneumococci exclusively indicates the previous existence of lobar pneumonia.

3. It would seem that those cases of spontaneous recovery by perforation into the bronchi, described by Traube were exclusively or at least for the most part, of the kind due to pneumococci.

In the succeeding two years, 1889 and 1890 additional reports along the same line of investigation were made by a still larger number of observers, chief of whom were Thue of Christiania, Marfan, Netter, Dreyfus-Brisac, Troisier, Woillez, Jaccoud, Türk, Renvers, Leyden, Liebermeister, Kelsch, Bewley, Immermann, Schede and Mosler. To all but a few of these numerous and often valuable contributions in the line of original work, space forbids more than the merest reference. Thue not only made successful cultures of pneumococci from the pus taken from the pleural cavity, but by the microscope detected these organisms in great numbers blocking the lymphatics leading to the pleural cavity. Netter's paper based on forty-five cases of "metapneumonic" empyema, as Gerhardt had christened it, went into the subject with great detail. According to him, this form may be either primary or secondary and may appear prior to the crisis. At times there is a mild intermittent temperature and occasionally there is no fever; the prognosis is favorable. Cure may take place by resolution. The primary form may be observed, he states in children. Marfan endeavored to differentiate by their clinical picture the pyæmic, pneumonic and tuberculous forms of empyema. These characteristics will be stated in another part of this paper.

In 1891 this subject still continued not only to awaken interest, but to stimulate to additional inquiry, particularly as to the clinical appearances in the light of earlier and well settled bacterioscopic data. Bassi described a case of double sided rapidly fatal pleuritic effusion which contained Frænkel's diplococcus with staphylococcus p. aureus, and which *intra vitam* closely simulated a double sided pneumonia.

Von Ziemssen discussed twenty-five cases of purulent and two of sero-fibrinous pleurisy in children, and emphasized the benign character of that due to pneumococci as against that of streptococcus empyema. Vignalou confined his paper to a consideration of the characteristics of streptococcus empyemata. Wolbrecht, in reporting eighty-one cases of perityphlitis in Gerhardt's service at the Berlin Charité, dwelt particularly upon the not infrequent occurrence (38 per cent.) of right-sided pleuritis as a complication some of them being purulent. Hanot described a case of fatal streptococcus empyema arising in the course of scarlatina. One of the most exhaustive contributions, however, of that year, was a thesis at Paris by Courtois-Suffit, to whose conclusions particular reference will be made again repeatedly.

In the literature of 1892, it would seem that the contributors have concerned themselves mainly with the surgical treatment. Thus on the continent, the history of empyema for the past decade may be summarized as follows: as might be expected, bacterioscopic investigations prevailed for the first three or four years; these led gradually and imperceptibly to the study of the clinical phenomena, based on a clearer comprehension of the etiology and pathology. Until now, enlightened on points previously obscure to them, surgeons are proving the best methods of operative interference.

Meantime, what was being done and what reported in England and the United States? Alas! but little except plodding along in the old beaten paths. The influenza epidemics afforded abundant material for observation and treatment; and hence English and American periodicals teem with reports of cases. In some, lamentable ignorance is displayed of recently established truths; while in others, reporters allude incidentally to facts of etiology and pathology in a manner that evidences their familiarity with the subject. There are some notable exceptions, however.

Drummond in 1891 considered in clinical remarks on empyema the relation existing between it and pneumonia, its bacterial nature and its great frequency. He expressed the opinion moreover, that serous exudation within the pleural cavity is almost never transformed into pus, but the purulent effusion is such *ab initio*. In November, 1890, Bewley of Dublin, had contributed an elaborate paper on the subject, and although his investigations like those of many others, added nothing new, they are memorable as having been among the earliest undertaken by English speaking investigators. In this country in that same year appeared a paper by Mary Putnam Jacobi, wherein she considered chiefly points in diagnosis and the effects of pressure on the heart. Bayard Holmes of Chicago, contributed an able presentation of the subject to the Cook County Hospital Reports for 1891, in which he not only set forth correct principles of its surgical treatment, but displayed intimate acquaintance with the bacteriology and pathology of the disease. A paper by Koplik in 1892 dealt with empyema as it occurs in childhood and discussed its relations to pneumonia, etc. Other contributions, notably one by Osler and another by Light are concerned with pulsating empyema and the conditions of its production.

Although not intended to be an exhaustive enumeration of the literature of this subject, and having to do with only the medical phase, these remarks it is hoped, will present at least a correct résumé of what has been done in this field of medicine in the past ten eventful years.

ETIOLOGY.

From such reports as the foregoing it is safe to assert that the determining factors in suppurative pleuritis may be positively stated. The exciting or immediate cause of an empyema is the presence of microörganisms in the pleural cavity. There may be several kinds, either such as are pathogenic of some attendant affection, as the diplococcus of Fraenkel or Freiländer's pneumococcus, or the bacillus tuberculosis; at other times the germs are pyogenic, either streptococci or staphylococci, or a mixture of these, or of one of these with pneumococci or tubercle bacilli. In the case of gangrenous empyema the microörganisms are saprogenic.

Furthermore, according to Netter and Courtois-Suffit at least, purulent pleurisy due to the pneumococcus may be primary, particularly in children. Tubercle bacilli may also occasion a primary effusion, which, according to Marfan, is serous if the bacilli are encapsuled, but purulent when they gain access to the pleural cavity.

In most cases, however, whether the empyema is metapneumonic or pyæmic, it is secondary. In the case of pneumococcus purulent pleuritis the observations of Thue indicate that the access to the cavity is by way of the lymphatics. In the form due to

pyogenic bacteria, on the contrary, Marfan considers the exact mode of their propagation not definitely ascertained. They may be carried by the lymphatic circulation into the pleural cavity. But it is also conceivable that they may gain access through the blood, in way of secondary infection. For instance, in scarlet fever or some other disease occasioned by a pathogenic organism, the germicidal action of the blood becomes weakened or destroyed, and all barrier is removed to the ingress of other germs, and of course, pyogenic. In the case of a pyæmic empyema Rosenbach has shown that the *atrium* of infection may be a furuncle or some bone disease; according to Fraenkel, a tonsilitis or pharyngitis; and in such, as in a septic pneumonia, the channel of infection of the pleura is probably lymphatic.

Kracht's experiments seem to show that the healthy pleura can successfully resist the action even of these formidable invaders and that suitable conditions for their development must be afforded either by mechanical or chemical injury, or a fluid affording proper soil for their growth must be present. In septicæmic conditions, therefore, an alteration in the normal properties of the cell doubtless takes place that serves like a chemical injury to favor the development of the microörganisms on the membrane capable in health of successful resistance.

In accordance with these facts we have the following well known list of local and general conditions to which empyema has been recorded as secondary: Infectious and eruptive disease, influenza, erysipelas, pyæmia, puerperal septicæmia, croupous pneumonia, septic broncho-pneumonia, pulmonary tuberculosis, phlegmons as furuncles, suppurative disease of bones, tonsilitis, pharyngitis, perityphlitis, purulent otitis, etc. Of these, croupous pneumonia and influenza are the most frequent predisposing causes.

MORBID ANATOMY.

Under this head are considered only the character of the exudation and the changes in the pleuræ. In the metapneumonic form Marfan, Courtois-Suffit and others describe the pus as thick, creamy, odorless and of a greenish or greenish yellow color. It is remarkably rich in fibrine that may float about as large *flocculi* and often block the aspirating needle. The pleuræ are thickened by firm layers of false membrane which by adhesion encapsulate the pus. Indeed, the tendency of this variety of empyema to become encysted is emphasized by all observers. Not infrequently the pus is very circumscribed, being limited to a single lobe or even to but a small part of a lobe. Potain has designed such as "interlobaire." In some cases more than one pus pocket is formed. The amount of exudation is said to be greater in the acute and primary than in the latent or insidious form. All observers comment, also, on the great liability of pneumococcus empyema to spontaneous evacuation through the bronchi. Moreover, Türk has shown that this occurrence is not attended by the formation of pneumothorax, since the pressure under which pus is forced by the act of coughing into the bronchi is greater than that of the inspired air.

In the empyema of streptococci the pus is thin, yellowish, without odor, flocculent and displays no tendency to become encysted. The development of the pleurisy is slower than that of empyema due to pneumococci, and the amount of effusion is usually moderate.

The empyema due to bacillus tuberculosis may be likened to a cold abscess; the pus is thin, yellowish, opaque, odorless and contains no flakes of fibrine; but the pleura is thickened by layers of plastic exudate, containing tubercular nodules. In this form we frequently find permanent fistulous openings in the parietes through which pus is chronically discharged.

In purulent pleurisy, caused by mixed infection, the character of the pus is determined by the microörganisms which are the most virulent or possibly most numerous.

Pleurisy occasioned by pyogenic organisms may occasionally complicate pulmonary tuberculosis. Pyæmic empyema displays no tendency to rupture spontaneously into the bronchi. Jaccoud has described a case of empyema (variety not stated) in which the pus burrowed its way into the perineum and scrotum and finally burst into the bladder.

Völker tells of a boy six years old, in whom ingested liquids were discharged through the opening in the chest wall. Autopsy revealed necrosis of the heads of the fifth and sixth ribs, and the vertebrael and small perforations of the œsophagus communicating with the empyema cavity.

SYMPTOMATOLOGY.

Since the characters of the pus vary in accordance with the nature of the microbe, particularly whether pathogenic or pyogenic, it would follow that the symptomatology must differ and be determined in its chief features at least, by the nature of the effusion. This is true, no doubt; but as yet clinical observation has not kept pace with bacteriological investigation. Moreover, this part of the subject has its difficulty enhanced by the fact that in most purulent pleuritic effusions more than a single kind of microörganism is present. Nevertheless, we are able to distinguish pretty clearly, in our present state of knowledge, three, yes! four chief types, if we include the gangrenous form of empyema.

Here again the writer will avail himself of the statements of Courtois-Suffit and others, since the cases given later on, like most others observed by him belong to but one category:

1. A metapneumonic empyema may arise suddenly, either independently of croupous pneumonia, or according to Jaccoud, in association with the pulmonary affection, being detected usually about a week after the onset of that disease. At other times the empyema develops insidiously during the course of the pneumonia and is then recognized after the primary disease has resolved, or it arises abruptly and acutely during convalescence from the pneumonia. The temperature is that of a continued fever without distinct and striking irregularities. The pleurisy may terminate by absorption or spontaneous evacuation, as previously stated. In this latter event gradual obliteration may take place by cicatrization of the fistulous tract—or, according to Courtois-Suffit, an encysted cavity may be left behind.

Netter agrees with Jaccoud that the empyema sometimes appears before the crisis of the pneumonia, but states furthermore that the fever occasionally assumes the character of a mild intermittent and is in other cases entirely absent. Chills and sweatings are not severe.

2. Marfan distinguishes all empyemata due to

pyogenic organisms as pyæmic, whereas, Courtois-Suffit endeavors to differentiate between that of streptococci and staphylococci, and that in which the former alone act as the morbific agent, by the still greater gravity of the infection. The difference seems to be one of degree, not of kind. Indeed this may be said of all varieties of purulent pleuritis. Since the distinction between empyema due to streptococci and that from mixed infection, as Courtois-Suffit terms, it is subtle, it is practicable to group them together.

This pyæmic form is secondary to some local suppuration or constitutional infection, as puerperal septicæmia, and may be insidious and latent. Should it follow the primary affection, its onset may be acute, frank and painful. Its evolution is slower than in the case of metapneumonic empyema. The temperature is that of streptococcus infection, with marked remissions and exacerbations. Chills and sweating are pronounced, prostration and emaciation progress steadily, and the clinical picture is more or less distinctively that of sepsis, as described in most text books. The duration may be long and death is generally from exhaustion. Rupture into the bronchi forms a rare termination.

3. Tuberculous empyema may also set in acutely and distinctly, or its development may be so insidious and its symptoms so latent that the patient is unconscious of its presence, although the effusion is copious. The fluid accumulates slowly but persistently, the general health not being much affected and fever being absent. Those cases described by authors as chronic and without evidence of fever or other grave constitutional disturbance probably belong either to this or the metapneumonic type.

4. Gangrenous pleurisy rapidly occasions most profound and dangerous symptoms of sapræmia, the characters of which are too well known to need repetition here.

The symptomatology displays nothing characteristic as regards respirations and pulse. The former may appear natural, while the pulse corresponds in strength and rate to the degree of prostration and sepsis. Cough, except there be phthisis, pneumonia or some other affection of the lungs, appears to depend on the degree of accompanying bronchitis. Pleuritic pain, if present in the beginning, disappears as the exudation occurs. Œdema of the affected half of the chest is not frequent, but according to Vignalou may be observed in streptococcus empyema. Dryness of the tongue is determined by the degree of the septicæmia and may not exist in mild cases of pneumococcus pleurisy. Disturbance of the sensorium also depends on the character of the effusion and the resulting degree and duration of systemic infection. In short, the clinical picture displays a wide variety of shade and coloring determinable by the bacteriological factors.

DIAGNOSIS.

It goes without saying that physical signs by which a simple pleuritic effusion is detected are serviceable in the determination of an empyema. There is one exception, however, that must be borne in mind. Owing to the fact that pneumococcus pleurisy is generally encysted and that this is by far the most common form of empyema excepting perhaps the tuberculous, the upper line of dullness does not shift with change in the patient's position. Moreover, the sacculation of the pus prevents the upper line of dullness from assuming the curved or "S line of Ellis," so characteristic of sero-fibrinous effusions. In other varieties of empyema in which adhesions are not so apt to take place, there may be no deviation from the usual laws governing dullness on percussion. But in empyema associated with or following pneumonia the exudation is very likely to be circumscribed to the limits of the affected lobe throughout—or to occupy the greater portion of it, thereby leading to diagnostic errors. If the empyema has developed during the course of a croupous pneumonia the persistence of dullness over the lobe together with the constitutional disturbance leads the practitioner very naturally to conclude resolution is delayed. Or, if the pus be circumscribed to an area below the angle of the scapula, and dullness remain over this area, after resonance has returned round about, the conclusion is natural that resolution is incomplete, or, perchance that a pulmonary abscess has supervened. In several instances of this kind observed by the writer, indispensable and oftentimes decisive information was derived from evidences of pressure on the heart. True! cases exist in which the encysted pus is of so small amount as to occasion almost inappreciable displacement of the apex beat of the heart. In such instances, as well as in those with displacement of the apex to the left from enlargement of the left ventricle, etc., positive diagnosis may not be possible without the aid of the aspirating needle. Changes in the heart's position are more difficult also of determination when a small empyema is left sided. It is this sort of circumscribed empyema which Potain has described and because it is confined within the limits of a lobe has designated *la pleurésie interlobaire*." On account of the liability of its being mistaken for a pneumonia, if reliance is placed on the results of percussion, he advises careful study of the breath sounds and of pectoriloquy, to which may be added signs of pressure on adjacent viscera.

Aside from physical signs, valuable aid in determining the nature of a pleuritic effusion may be derived from careful study of the temperature taken at frequent and regular intervals. In this way the writer believes irregularities will always be detected which, although slight, perhaps of only one- or two-fifths of a degree, are yet too frequent and unmethodical to be mistaken for those of the diurnal, physiological variations. Although Courtois-Suffit states the pyrexia of pneumococcus empyema to be that of a continued fever without irregularities, the admixture of pus microbes with those of pneumonia is so frequent in these cases that slight, yet significant variations in the temperature are generally observable.

Finally, should all means of making a differential diagnosis fail us, we may yet fall back as a last resort on exploratory puncture. Nevertheless, this is not infallible, as will be seen in one of the following cases, for the pus being often circumscribed, the needle may be passed in a little at one side—or it may enter an adhesion and therefore draw no pus.

It is evident, therefore, that the diagnosis of that very form of empyema which is one of the most common, is not always easy.

PROGNOSIS.

In empyema due to pneumococcus the prognosis

may be considered favorable. The mortality, according to Courtois-Suffit does not exceed 5 or 10 per cent., according to Netter 2 or 3 per cent. and it yields to simple puncture and drainage. Absorption of the pus is possible or it may in rare cases become chronic, but if not operated on is very likely to break through into a bronchus. According to Jaccoud this spontaneous evacuation takes place in 25 per cent. of the cases. In this event of course there is a new element of danger, from the entrance of pyogenic organisms.

In empyema due to streptococci or staphylococci or both, danger to life is far greater depending on the degree of septicæmia. Spontaneous cure by absorption or evacuation through the bronchi is most unlikely, and if an operation be not performed death is probable from septicæmia. The duration of the disease may be long, provided constitutional infection is slight. Simple puncture and drainage are not sufficient.

In the variety known as tuberculous the duration may be also long, but the effect on the general health or on the pulmonary affection may be apparently slight. Death generally results from the tubercular disease of the lungs rather than from the empyema as such. Its removal by surgical interference is advisable however.

Gangrenous empyema is extremely grave, but not necessarily fatal, since Hanot has reported a case which recovered under appropriate and radical surgical methods:

Case 1.—A. F., female, aged 6 years, seen in consultation about March 1, 1892. History of acute illness a month earlier, thought to be la grippe and characterized by high fever, some stupor and intense pain in the back and posterior portion of the left side; cough present, but not a marked feature. After about a week or ten days symptoms subsided, and child was thought convalescent. Patient then unexpectedly complained one day of chilliness; fever returned, gastric symptoms became urgent, and the case dragged on with daily pyrexia of a distinctly remittent type; emaciation and weakness increased, but the friends and attending physician noticed no sweatings or manifestations of rigors. Cough and dyspnœa were never pronounced symptoms. The child seemed simply wasting away gradually from the daily fever. *Status presens*—Patient in bed, moderately emaciated, nervous, restless, with considerable muscular strength, skin dry and somewhat harsh, temperature about 99 3-5 degrees at 10 o'clock A. M., pulse rapid and weak, tongue not peculiar, no complaint of pain. Physical examination—marked dullness at base of left lung, extending from just below scapular ridge forwards and downwards to a point just a little outside of and below the level of the left nipple and posteriorly down to the inferior limits of the thorax. The area of dullness was confined to and corresponded almost exactly to the boundaries of the left lower lobe. It did not shift its position. Elsewhere the percussion note was resonant. On auscultation the breath sounds over the dull area were bronchial and voice was distinct and of diminished intensity. In the remainder of the left and throughout the opposite lung sounds were normal. Over the central portion of the area of dullness, in which the dullness approached to flatness, pectoral fremitus was abolished. The intercostal spaces seemed to be somewhat more prominent, as was also the rotundity of the affected side. The heart's apex could not be felt distinctly, but seemed to be situated further toward the median line than is normal to a child of that age. The cardiac sounds were free from murmurs. There was no doubt in the writer's mind of the real nature of the difficulty, yet the physical signs were puzzlingly like those of pulmonary consolidation, and therefore he hesitated to advise surgical interference without ocular proof to the parents of the existence of pus, all the more, even, since the suggestion of empyema was incredible to the attending physician. An attempt to insert a needle occasioned such fear and excitement to the child that it had to be abandoned. It was then decided to determine the existence of empyema by the symptoms and temperature. Minute questioning elicited the fact that at times, usually in the forenoon, the child would ask to have the bedclothes tucked about her on account of feeling a little cool. It was learned too that occasionally slight moisture would be observed on the skin. The fever rose each afternoon and reached the neighborhood of 103 degrees. It was decided to wait until Wednesday, P. M., then four days distant, have the temperature taken by the nurse and recorded every four hours, day and night, and then if the temperature chart did not decide the question to resort to aspiration under an anæsthetic and operate immediately, if the result so indicated. It is a matter of sincere regret that the temperature record could not be obtained from the nurse whose address has been lost. But it can be stated very positively that the temperature ran as follows: Between seven and nine A. M., it reached its lowest figure, about one- or two-fifths of a degree F. above 99 degrees and then rose steadily almost without fluctuation to 102 and three or four-fifths degrees at about 5 o'clock P. M.; from this height which was maintained until midnight, the curve would gradually and steadily descend, almost without fluctuation until in the A. M., between six and nine o'clock, it stood midway between 99 and 100 degrees. Upon comparing the records of corresponding hours, however, it was found that they sometimes varied as much as one- or two-fifths of a degree. Suspicions were confirmed Wednesday, and that day an engagement was made with the surgeon, Dr. Bayard Holmes of Chicago, to operate Thursday. Wednesday evening news was brought to the writer of a great and astonishing change in the child's condition. During the afternoon she had begun suddenly to cough and expectorated a small amount of thick yellow sputum mixed with a little frothy mucus, and the fever had not gone much above 101 degrees. It was concluded by the writer at once that the pus had begun to break through into the lung. Whereupon the surgeon was notified and accordingly appeared ready for action early the following morning. The prediction was made that the pus would be thick and creamy and circumscribed.

So soon as the little patient was well anæsthetized a good sized hypodermic needle, previously and carefully aseptic-ized, was introduced and a syringeful of thick, creamy yellowish odorless pus was obtained. A portion of a rib in the middle of the area of dullness was resected, and so soon as the intercostal tissues were opened with a pair of blunt pointed forceps, about a pint of pus simply spurted forth. The pressure was evidently great, as it spurted nearly to the ceiling. Huge fragments of fibrine were extracted, a double drainage tube was inserted, one-half of which was perforated, the wound was properly dressed and the diagnosis had been verified. The child made an uninterrupted recovery. Unfortunately the pus was not examined for microörganisms, owing to failure to secure a sample uncontaminated by exposure to the external atmosphere. However, the history of the case and the character of the pus make it reasonably certain that pneumococci were chiefly concerned in its production.

Case 2.—Col. W., war veteran, aged fifty-eight years, became ill Jan. 21, 1892, with lobar pneumonia of right

lower lobe, and a couple of weeks later passed into the charge of Dr. C. B. Reed, who found him still very ill and with considerable fever, there having been no permanent subsidence of temperature following a usual crisis. Until the 20th of February the patient's temperature fluctuated in the morning between ninety-eight and three-fifths and 100 degrees, and in the evening between 100 and 101 3-5 degrees. Between Feb. 20 and 28, the A. M. temperature ranged between ninety-eight and three-fifths and 100 degrees. At evening the thermometer registered variable temperatures, from 100 2-5 degrees on the 20th up to 103 2-5 degrees on the 28th. It then subsided and for the month of March remained fairly low as shown by the accompanying

Plate I.

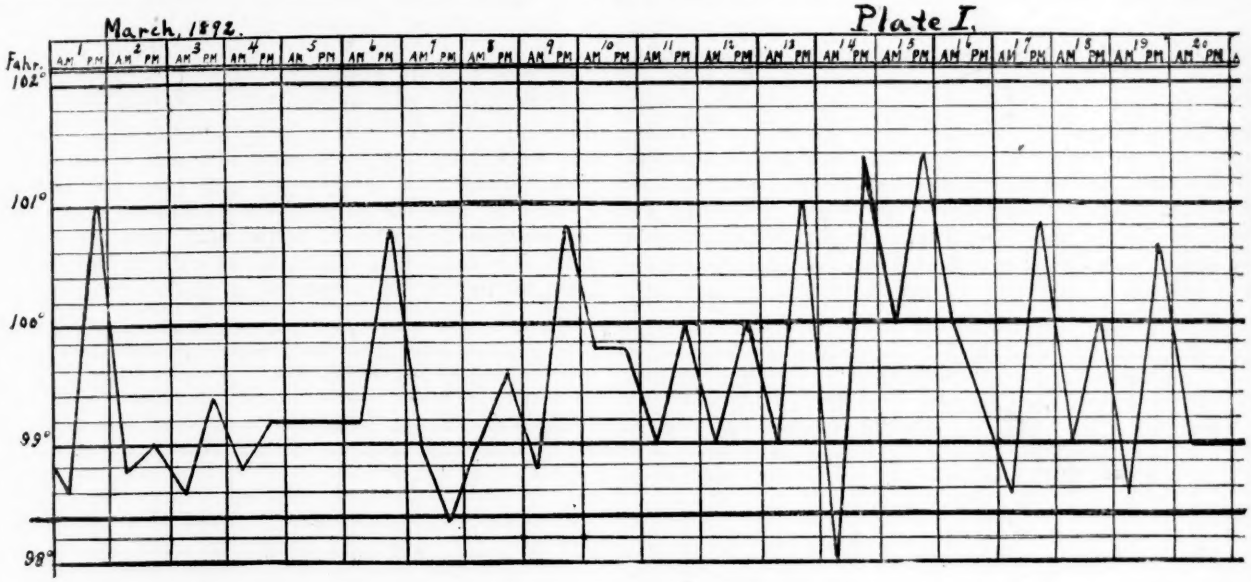
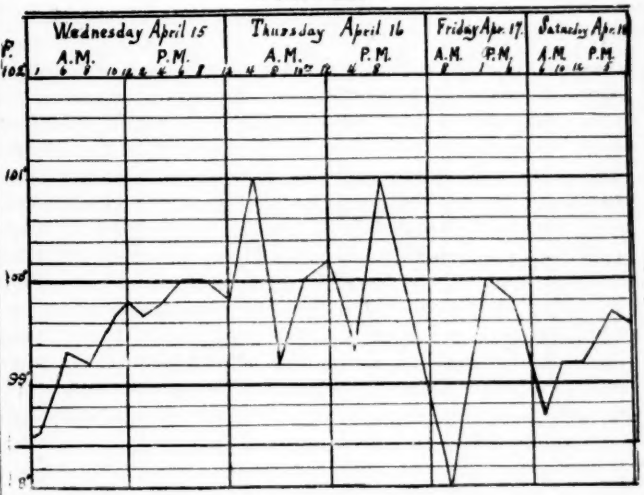


chart. His general condition was feeble, however, and he was supported with tonics, as quinine, stimulants and nourishing foods, in the hope that the lung would eventually clear up. March 24, patient coughed up a little pus. April 13, he again expectorated pus, this time about a pint of thick yellow pus. The following day, April 14, the writer was asked to see him in consultation, as it was supposed he had developed a pulmonary abscess. *Status presens*—patient was in bed, feeble, emaciated, skin dry, tongue not specially noteworthy, pulse 108 and weak, appetite poor, bowels rather constipated, intellect clear, but patient very nervous. Questioned as to chills, he admitted slight chilly sensations "down the back." Physical examination—inspiration showed respirations easy and heart's apex situated close to the left nipple in fifth interspace. Palpation—diminished pectoral fremitus over the right infrascapular region, exaggerated in front; percussion—impaired resonance on the right side of the chest anteriorly, dullness limited to the right lower lobe, being specially marked and with distinct sense of resistance below the inferior angle of the scapula; auscultation—exaggerated vesicular respiration anteriorly, faint bronchial respiration in upper part of lower lobe, but suppressed in the infrascapular region, over the area of most pronounced dullness, voice sounds nowhere cavernous, but a small area of pectoriloquy at the level of the fifth rib just outside of the anterior axillary line, no râles and nowhere any indication of a cavity. The left lung was normal thoughout. Accordingly the diagnosis was made of empyema following pneumonia and having begun to break through into the lung; not a pulmonary abscess. An exploratory puncture was advised to settle the question and it was replied that a surgeon, Dr. Weller Van Hook, had already aspirated without obtaining pus. Nevertheless the opinion was maintained that it was empyema, and for some reason, perhaps because of sacculation of the pus, the needle had failed to reach the pus. During the next few days more pus was expectorated, and on the 17th the writer summoned again in consultation to determine whether or not patient could endure an operation. Examination now revealed an area of impaired resonance of tympanic quality where previously dullness and pronounced resistence had existed. The breath sounds too, were blowing imperfectly amphoric. There was no doubt of a cavity, and the writer believed a circumscribed pneumothorax. The operation was advised without delay. Accordingly it was done, and both Dr. Reed and Dr. Van Hook became convinced that the condition was an empyema which had ruptured into the lung. Patient made a slow recovery. Unfortunately no pus suitable for bacteriological investigation could be obtained in this case.

Chart 2 shows the temperature for three days intervening between the first examination by the writer and the final operation.

Plate II.

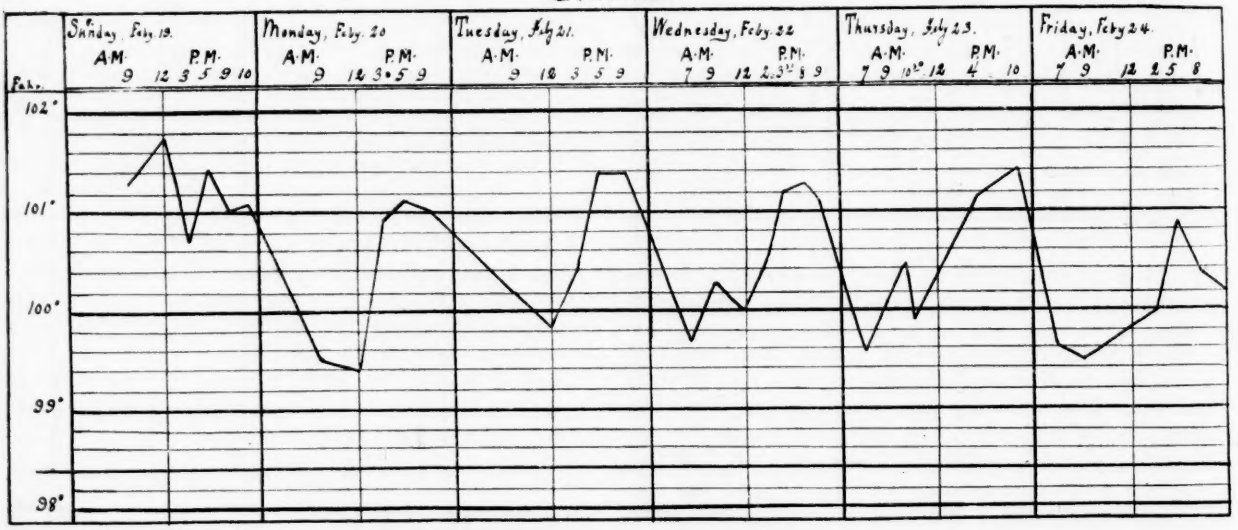


Case 3.—Feb. 24, 1893, was called in consultation by Dr. R. N. Hall to see Mr. H., aged 37 years, bookkeeper, who gave the following history: About a month previously patient had been stricken with croupous pneumonia of right lower lobe; disease pursued a typical course until th

seventh day when the usual critical defervescence occurred; instead, however, of temperature remaining normal, pyrexia again appeared and for the ensuing three weeks maintained an irregularly remittent character, falling in the early morning to 99 degrees, or sometimes a little below, and rising the P. M. to 101 2-5 degrees. His strength grew very feeble, heart's action alarmingly weak at times and emaciation progressed, in spite of tonics, and as much concentrated nourishment as he could be made to take. The signs of consolidation of the lobe did not clear up, although cough had greatly diminished and expectoration had become chiefly or mainly catarrhal. *Status presens*—patient in bed, lying partly on the right side, emaciated, feeble, very nervous; pulse rapid and of feeble, irregular force, skin rather dry, tongue coated but moist, appetite moderate, bowels inclined to constipation; temperature 100 degrees, pain in right side of chest when patient assumed left decubitus. Physical examination—apex beat in fifth interspace, just within left mammary line and in force a scarcely perceptible tap; cardiac dullness extended from median line to half an inch outside of left nipple. Over the left lung resonance and respiratory sounds were of normal quality but somewhat exaggerated. In comparison at least the anterior portion of the right half of the thorax was impaired in resonance and the breath sounds were slightly broncho-vesicular; posteriorly and laterly the base of the right lung was slightly yet appreciably larger in diameter than the corresponding part of the opposite side, and the intercostal spaces felt somewhat filled out, particularly just below the angle of the scapula. Percussion revealed dullness extending from just below the suprascapular ridge downwards and forwards to the lower border of the fifth rib a little outside of the anterior axillary line, being from this point backward and in the infrascapular region specially intense; respiratory sounds over this dull area were faint and bronchial, accompanied by a superficial, subcrepitant, evidently pleuritic exudation râles, just below the inferior scapular angle. Hepatic dullness extended an inch below the costal arch, and at this level the tender lower edge of the liver could be palpated. Diagnosis—empyema following or rather associated with lobar pneumonia. It occasioned surprise and incredulity, particularly in the mind of a third physician present, because of the trifling symptoms of sepsis. However, the suggestion to introduce an aspirating needle was endorsed; the center of the dullest area was determined; the previously asepticized needle was introduced and a syringeful of thick, creamy, slightly greenish yellow, odorless pus was withdrawn. The following day was selected for the operation. The annexed chart No. 3 shows the temperature as taken at irregular hours for a week prior to the surgical interference.

The writer was not present at the operation but will narrate the details as nearly as he can recall them from the description given by the operator, because interesting and instructive. After patient had been etherized an aspirating needle was passed into the pleural cavity at a point somewnat forward and inferior to the area of most pronounced dullness. No pus was obtained. Nevertheless the intercostal space at the point was dissected down upon and then opened; hemorrhage occurred, necessitating the use for a few moments of iodoform packing. When the flow of blood had ceased sufficiently at least, the finger was introduced and a few indistinct adhesions were thought to be felt, but no pus. Somewhat higher up and backward, however, could be felt a boggy mass that seemed to bulge from the surface of the lung into the pleural cavity and from its feel was supposed to be a pulmonary abscess. The attempt to open into this abscess with the finger nail failed, owing to the toughness of the overlying membrane, and hence seemed to confirm the conclusion that this was a pulmonary abscess and not empyema enclosed by false membranes. Consequently using his finger as a guide the surgeon penetrated the pus sac by means of a pair of Bilroth's forceps; blood and thick, creamy pus escaped, and at the same time it became evident that a communication had been formed between the parenchyma of the luugs and the pleural cavity. Drainage tubes were inserted, the wound suitably dressed and the patient returned to bed. The subsequent history was that of a slow recovery.

Plate III



The conclusion seemed inevitable that a pulmonary abscess and not an empyema had existed. The writer was not convinced, however, and submitted a sample of the pus first obtained for microscopic examination to Dr. Adolph Gehrmann, a competent microscopist. His report is as follows, and effectually disposes of a pulmonary abscess.

"The specimen of empyema pus given to me showed upon microscopical examination blood and pus cells, numerous chain and grape cocci and a few pneumococci. There were no epithelial cells or elastic fibers.

The cultivation experiments were entirely negative, although I made six plate cultures from the material. Some of the antiseptic solutions used during the operation must have been mixed with it. I have slides for reference."

The following points in the foregoing cases seem worthy of comment. In the examination of the child, bulging or smoothing out of the intercostal spaces over the affected lobe was noticed. This is not in accordance with the statement of Chapin, who attributes the absence of bulging to the great compressibility of the lungs in childhod. And that the pressure was great was evidenced by the distance to which the pus spurted, as soon as the incision was made. The height of the post meridian temperature, as compared with that of the morning, was unusual for a pneumococcus empyema; and yet the pus corresponded in character to that produced by this organism. It may be reasonably assumed, therefore, that this peculiarity was due to the age of the patient.

In both cases, two and three, although for different reasons, the condition was mistaken for a pulmonary abscess finally. Yet in both at first resolution was thought delayed. In both, the course and variations of the fever quite closely bear out statements made as to its mildness and trifling irregularities. Distinct chills and perspirations were wanting in all. In cases one and two, the tendency to spontaneous rupture into the bronchi was displayed. Case one appears from the history to have set in acutely after the crisis of the pneumonia. The other two developed insidiously. All three were encysted. They all belong evidently to one category, and were metapneumonic.

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DISCUSSION OF PAPERS ON PNEUMONIA.

Dr. William E. Quine, Chicago.—The various opinions that have been expressed with respect to the treatment of this disease seem to indicate that the subject has been regarded from every rational point of view and from some points of view which, if not irrational, at least are so difficult to understand, that some rational beings find themselves in a very serious dilemma. The whole philosophy of the situation in relation to pneumonia is that we do not treat pneumonia at all, we treat the individual and ignore the name and the morbid anatomy connected with the disease with which the individual is affected. In some cases of pneumonia from beginning to end the line of treatment is vigorously supporting; in other cases the line of treatment in the beginning is actively sedative and toward the end is likely to be supporting. The philosophy of the situation is embodied in the statement that pneumonia is to be systematized, classified; we are to ignore the fact that the patient has a specific disease and we are to obviate the tendency to death. In one case this tendency is from cardiac asthenia, in another case from compression of the nervous centers and in a third case it is from gastric irritability. We can understand in reference to the complications the phenomena which develop in the course of pneumonia, that a place may be found in these cases for the administration of calomel, in other cases for strychnia or carbonate of ammonia or some other medicine. The gentlemen who take a positive stand against a stimulant or a sedative line of treatment it seems to me sometimes find themselves in a dilemma from which it must be very diffi-

cult to extricate themselves. My understanding of the signification of the term stimulant is that it is a medicine which increases action and that sedative diminishes action; how alcohol can be a sedative and a stimulant at the same time is a question I should be very glad to have explained. The gentleman who is a firm believer in drugs and who has a somewhat vigorous predilection for the administration of calomel in the treatment of pneumonia, has derived very satisfactory results from the administration of a mixture of nitrate of amyl, nux vomica and digitalis, but if I have not forgotten some of the things I have learned in the study of materia medica, these agents are physiologically opposed. You give a medicine that lessens vascular fullness and one that increase it at the same time. It would seem as advantageous to the patient to give him absolutely nothing, bid him Godspeed and give him a fair show for his life.

Cases of pneumonia as they have come under my observation—I refer to croupous pneumonia—are ordinarily easily divided into two groups, in which the term sthenic and asthenic may be properly employed. In a case of sthenic pneumonia, in a robust vigorous muscular individual whose pulse rate is 120, temperature 105, I am not able to see any impropriety in the administration of veratrum. It slows the pulse it is true, and relaxes the arterioles of the body and thus relieves the heart, that is equally true, and it seems to me that in these sthenic cases of pneumonia veratrum administered in the early stage to the extent of controlling the circulation is a medicine that is capable of doing some good; I am very far from advocating it as a *sine qua non*, as a medicine that must be given, and equally far from referring to strychnia or carbonate of ammonia in this way, but I think that veratrum has a place, as carbonate of ammonia and strychnia, and as I firmly believe, alcohol has a place.

DR. BABCOCK:—I quite agree with the author of the first paper that we cannot rely upon statistics; I do not believe that we know whether we have more deaths from pneumonia now than we did thirty years ago. There are many conditions in pneumonia that require different treatment and there are many locations where it requires different treatment. In the South, where we have malarial poison, we would likely treat a case of pneumonia with quinine; and in different locations the treatment would be different.

The author of the second paper spoke of blood letting reducing the toxines of the blood, but we must remember that at the same time we are reducing the toxines of the blood we are also reducing the oxygen, and in that case I don't believe blood letting would be of any benefit. As to the pneumonia of old age, last winter two cases came under my observation with pneumonia, and it is astonishing the amount of alcoholic stimulant they will bear; the two different cases were between seventy and eighty, and during their sickness must have taken as much as a gallon and a half of whisky, and they bore the whisky well. In regard to alcohol, it not only acts as a stimulant but also as a bacillicide; it has the same effect on the poison of pneumonia as it has on the diphtheria bacilli. We would not think of bleeding in cases where the vitality of the patient is run down, there we would need stimulants and tonics. However, I believe, we are very much at sea in the treatment of pneumonia. In my part of the country the generality of practitioners recommend large poultices of flax seed meal over the lungs; whether that has any effect or not I do not know. Sometimes I use a cotton pad over the lungs. These so-called expectorants in the treatment of pneumonia have little if any effect. In the first place I usually see that the room in which the patient is lying is well ventilated, and have everything as aseptic as possible, and in the acute part of the disease use veratrum viride or aconite until the temperature falls, and after that I treat my patient with iodid of potash, and stimulants if necessary.

DR. PORTER, Kansas City, Mo.:—Pneumonia is a self-limited disease and I do not suppose any of us pretend to cut it short any more than we expect to cut short typhoid fever, and I don't see that there is anything particular to treat in pneumonia except its complications. So far as I know we have found no antidote to the poison which at the present day we believe to be responsible for this disease. The congestion of the lung is the product of this poison, consisting first in the inflammation and then in the constitutional symptoms from the same. I have seen a good deal of pneumonia, and I have been through the line of bleeding and through the expectant plan. A few years ago when we treated pneumonia by bleeding I was in a malarial country and we never thought of treating pneumonia without quinine, because they were all suffering from malaria, and our success was wonderfully good. We gave it for its physiological effects, and we resorted to venesection, and I don't know but our patients got along just as well as they do now. But the wave came along and said no more bleeding, and we stopped it and gave other remedies. I advocate the use of alcohol in certain stages of pneumonia. It being a self-limited disease our object is to prevent death if possible, and if we have failure of the heart I don't know of anything that is a better sedative stimulant than alcohol; I look upon it as a cardiac stimulant and sedative if given in certain quantities. Our object in treating pneumonia is to bridge it over until such time as this toxic poison has exhausted itself, and if we can sustain the life of the patient until that is brought about he will get well, and I don't know of any remedy that it is equal to alcohol in that respect; it is certainly better than all expectorants. I can see wherein strychnia, which has been advocated, is a good thing; it is a good bitter tonic and has its effect upon the nervous system, but certainly it could not compare with alcohol in bridging over the dangerous period in these cases. The great trouble with many cases of pneumonia reported unfavorably is that these people who are reported as having died of pneumonia have really died from some sequelæ of pneumonia.

DR. JENKS, Keokuk, Ia.:—Statistics are misleading for the reason that fifty years ago they knew nothing about physical diagnosis, about percussion and auscultation, and three-fourths of the cases of fatal pneumonia in old people were overlooked or were called deaths from old age. Then in children and a vast number of other cases where the diagnosis was obscure the physician made a faulty diagnosis, so I think the statistics as regards the mortality in the treatment of pneumonia should be thrown aside. Nitroglycerin is a very good remedy in these cases. In regard to the treatment of pneumonia by stimulants, we rely too much on alcohol. I believe in drugs, I do not believe in expectancy; it has done a great deal of harm in all diseases of late years; it has done much harm in pneumonia and typhoid fever. If I had typhoid fever I would much rather trust my life to a physician who had confidence in the right kind of drugs than to one who thought it his duty to take my temperature and pulse, and would say go ahead and ventilate the room. There is a great deal in getting a fair start in pneumonia. If you are called early, you can do a great deal to break up the congestion; you can make a case very much lighter by treatment, and I believe some of the benefits that it was asserted came from blood letting in the old days were due to calomel. Calomel has a place in the treatment of pneumonia that ought to be recognized; I do not believe in salivating a patient, but in giving it pretty

freely and in that way lessening the blood pressure and the temperature, and the heart will not palpitate so in the second stage. In the stage of hepatization you have to be very careful; ammonia salts with careful regulation of the diet does very well for that, but when the pulse creeps up, nothing in the range of materia medica is so beneficial as the judicious and continuous use of nitro-glycerin. I have been using it in 1-100 drop doses every two or three hours and sometimes oftener, increasing it each day, watching its effect on the pulse, giving it in connection with digitalis and strychnia. These remedies I rely upon in the last stage of pneumonia when I fear my patient is going into collapse. That treatment with me has been much more successful than the alcoholic treatment I was taught to use. When the profession begins to study the disease they will rely upon these three remedies much more. I use alcohol in some conditions of the system. I am a firm believer in drugs, but not in giving large doses of antipyretics such as antipyrin, phenacetin or any of those remedies, or what is worse, heroic doses of quinine; they are much more dangerous than the heart sedatives and antipyretics we are accustomed to be afraid of.

Dr. R. R. Ross, Buffalo, N. Y.—I believe it is necessary to classify pneumonia before we can treat it scientifically; I think it ought to be divided into classes referable to the heart, to the poison of the disease, and to the lungs. Cases referable to the heart ought to be treated entirely different from those which are suffering from the poison of the disease, the symptoms are different and the remedies employed in one case do not apply at all to the other. The question of bleeding has been discussed and reference has been made to modern therapeutic agents which will take the place of it. I have seen nitroglycerin used in these cases with excellent result; I saw a series of fifty cases in which it was used and they seemed to be better. This drug has a dilating effect upon the arteries and also a stimulating effect upon the heart.

Dr. Scott, Cleveland, O.—I believe that the etiology of this disease may not always depend upon the same condition. As an illustration: If I take a frog and prop open his mouth so he cannot breathe, he will have conjestion of the lungs very soon, and if that condition continues long he will die of conjestion of the lungs; where is your pneumococcus? it has reached lung tissue except from the air; there is some other reason for the conjestion in that case. I have frequently seen firemen, exposed to hot blasts, breathing in heat and smoke from a burning building, die from congestion of the lungs, from pneumonia really. What is the etiology in that condition? Does that depend upon the absorption or introduction or inhalation of the pneumococcus? There is no doubt in my mind that it comes along after the pneumonia; if you examine you will find what you call a pneumococcus, but that is secondary, it is not the primary cause. In regard to treatment, if we can reduce the conjestion in the first place our patient will get well, and if it has gone on to hepatization with a pulse of 120 and a temperature of 105, we have remedies by the application of which we can diminish the frequency of the pulse and reduce the temperature and the conjestion in the lung. When I commenced to practice medicine I used to bleed, and I do not believe that bleeding in selected cases is unphilosophical; I have no hesitation in bleeding a man except that it is out of fashion, and to advocate bleeding a man with pneumonia is thought to be barbarous.

Dr. Reyburn, Washington.—It seems to me the gentleman has struck the keynote in the treatment of pneumonia. We have a mortality from pneumonia in men in the prime of health, full of blood, full of life and vitality; these men are stricken down with pneumonia and in two or three days are dead. Now why should this be so, why should men in high vitality and health die suddenly from pneumonia? My belief is that in that type of cases a reversion to the old treatment, including blood letting, is not by any means unphilosophic, for the reason that these men as a rule have a bounding pulse, a free action of the heart filling up all the air cells of the lung and they die mostly of stricture. In these cases I give aconite and veratrum; then in this class of cases we bleed to cure inflammation, we treat a symptom that is killing our patient. Here is a man whose lungs are half filled up, the heart is pumping the blood with greater force than in health and after a while he becomes blue, and in that case I consider the treatment by aconite or veratrum or blood letting as good. But if we take a patient who is broken down from chronic alcoholism, such treatment would be fatal. We should not treat all patients alike. My experience reaches back for thirty-seven years, and I do not think we treat pneumonia as successfully as we did thirty-six years ago. We ought to divide these patients into two classes, and these two classes should be treated very differently. I know that we vastly over-use alcohol; I have seen a man bleed to death from gunshot wound with resulting pneumonia, under treatment by alcohol. At the same time let us not go to the other extreme; Arthur Helps says, when men try to swing the pendulum to one side, they swing it so far that it is apt to carry them to the other side.

Dr. Martin, New York.—We are called to a case of sickness, a man has had a premonitory chill, we find a pulse of 120 and we diagnose pneumonia. What are the conditions? The pulse is above its normal standing and it is pumping into the lungs 50 to 70 times more than it ought to. Suppose you had a tub of water with a supply pipe and a waste pipe going into it, you increase the size of the supply pipe but not of the waste pipe and you get an overflow. That is all there is of pneumonia, the rest is results. Control the pulse, you may use your own arterial sedative, but use it then and there, bring that pulse down if you can to 80 and all fear of pneumonia will be gone; if you bring the pulse down to 80 and hold it there, you will never lose a case of pneumonia. So long as the pulse is controlled the system is near its normal condition and there is no congestion, and if there is no congestion, there will be no hepatization, and no consolidation, and if there is no consolidation there will be no death. You must not let the pulse drop too low. I use one hundredth of a grain of nitroglycerin and I say to the nurse, if the pulse goes beyond 80 give the arterial sedative, if it goes below 65 give this, and I hold the pulse there for the first few days, and I never lose a case of pneumonia. A short time before I left home a man died with pneumonia and across the street another case was taken. The mother felt that she must lose her son because the man across the way had died. I said to her, "Good woman, do as I tell you and if this man dies I will pay the funeral expenses and give you a house and lot." I showed her how to count the pulse and on the sixth day the boy was lying on the lounge, he could not be kept in bed any longer.

Dr. George W. Webster, Chicago:—In those cases referred to where there was effusion after pneumonia, it was where the lungs had been affected by the pneumococcus, and later there was infection of the pleura by this same organism, and then effusion.

I have treated seven cases in the last sixteen months in patients ranging from three to forty years of age, and have treated all by one method, that of aspiration and then washing out the pleural cavity with an antiseptic solution, which was a saturated solution of boric acid, at each sitting

Sometimes there would be from one to six or eight fillings of the pleural cavity with this solution, to be immediately withdrawn. All of these seven cases recovered; in two cases one aspiration and washing was sufficient to effect a cure; in three cases two aspirations were necessary, and in three cases three, but in all of these cases there was complete and perfect recovery. In one case, where there seemed to be a considerable amount of cheesy adhesion, I injected a solution of the extract of pancreas, left it in position for nearly three hours, then aspirated. This pus had been digested, was soft and in a fluid condition, and was readily eliminated from the chest by the aspirating needle. I found that apparently the younger the patient, the more likelihood of recovery with one aspiration. It has been pointed out by a German surgeon that a large majority of these cases in children will get well with a single aspiration, without washing out the chest cavity; but it is simple, requires no anæsthetic, and can be done upon a person of any age, and it seems worthy of thorough trial. Seven cases is not enough to base any conclusions upon, but they point a direction in which treatment might be followed out to further advantage.

DR. MARTIN, New York.—I can not help thinking that it is better to avoid or avert a calamity than to provide for one. Take the same line of treatment I gave for pneumonia, controlling the pulse so you do not get the congestion and you will not get the consequent effusion, and if you do not get the effusion you do not get the pus in empyemic troubles. In some thirty-nine years in medicine I have never had a case of empyema, although numberless cases of pleurisy, and I have treated them in this way, and it can not be that I get all the mild cases when I find my brothers in the profession having cases of empyema.

DR W. A. BATCHELOR, Milwaukee, Wis.:—One of the new points brought out is the bacteriological relationship of different cases of pyemia or purulent pleuritic effusions, and it is a line of investigation which I think should be more followed out and probably will be in the future; and following it out the results will help us a good deal, I fancy, in coming to a proper conclusion in regard to the efficacy of different modes of treating it. We are a little inclined to think, in America, that every case of empyema must be cut into and drained; I am inclined to hold that opinion very firmly myself, but looking at it from the bacteriological standpoint, some of these cases are due to microörganisms in themselves not so virulent, nor in the nature of their products, and if we can save more of them by a single aspiration it is going to lead us into light on that point. We can all recall cases in which empyema has been cured by a single aspiration; we can recall cases in which a cure has followed the formation of a broncho-pleural fistula where there has been only copious expectoration of pus and the individual has gotten well. Those cases lead one to modify a little the strong position he may otherwise take in regard to cutting into all pleuras. It all reflects back on this bacteriological investigation; if we find that some kinds of pleurisies are produced by one sort of microörganism and others by another sort, it may help us ultimately to know in which case we may incise and drain and in which we can look for a good result after a single tapping. We are inclined to look upon incision and drainage as a suitable operation; the results are almost always good, and yet it is more serious than tapping; and yet other forms of empyema are not cured by tapping, by incision and drainage; some multiple resection will not cure. Those are of the more virulent type, the tuberculous, and so on. In this connection I fancy it would be unsafe to draw conclusions from the clinical picture of the case and the history and variations of temperature, etc., as to the exact form of microörganism present, the only thing to do is to get some of the blood and have it examined in the laboratory. Another point I had in mind is this: No doubt all of us have had cases of effusion in Bright's disease, and I think they are almost always uniformly serious, and that puts them out of this category. Bacteriological investigations of pleurisies may lead us to better modes of treatment, and to form better judgments as to what we are accomplishing in our treatment.

THE ACTION AND USE OF TUBERCULIN.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY J. T. WHITTAKER, M.D.
CINCINNATI, O.

Opinions regarding the virtue of tuberculin still vary between extremes. Clinicians in general are dissatisfied with the results, while the pure experimentalists in the laboratory continue to observe direct effects. Koch maintains in force all his original propositions concerning its virtue, and his immediate associates and assistants attribute the failures to complications.

Tuberculin is known to be a product of the growth of the tubercle bacillus in a culture soil of veal broth containing 1 per cent. peptone and 5 per cent. glycerin. It is extracted with 40 to 50 per cent. glycerin so that it keeps almost indefinitely. I have some of the first, furnished nearly two years ago. It still shows the same effect as that obtained last month; that is, in dose of one milligram (1 per cent. solution), it excites its peculiar reaction in tuberculous patients.

We get some new light on the action of tuberculin from experiments with ordinary cultures and with the dead bacillus.

Straus and Gamaleia recently report a series of experiments concerning the pathogenic effect of various cultures of tubercle bacilli. Intravencus or subcutaneous injections of filtered bouillon cultures of Koch's bacillus produce in healthy animals only a slight reduction of weight, from which the animals speedily recover, but produce in tuberculous animals the typical reaction of tuberculin. The intravenous injection of tubercle bacilli, killed by heat, produces in rabbits marked emaciation and final death, and at autopsy there were found numerous miliary nodules in the lungs, which consisted of a granulation tissue rich in cells, but without giant cells, and inside of this tissue there could be demonstrated numerous but well colored tubercle bacilli. The injection of diluted, heated, dead bacilli leads likewise to death, but shows on section no abnormal condition. The use, however, of more diluted solutions produces a gradual immunity to the more concentrated solutions. After subcutaneous injection a large abscess forms at the point of injection. The authors remark that this property possessed by dead tubercle bacilli, of maintaining their appearance and capacity of color in the living organism, does not belong to other microörganisms. Neither does the property of producing the same changes as the living bacilli. Besides this local effect, dead bacilli may produce cachexia and even death.

The foregoing observations lead to the conclusion that the chief toxic product of tubercle bacilli does not develop itself in the culture soil, but in the bodies

of the bacilli, so that cure will require the elimination of the dead bacilli from the body.

The observations of Koch, Prudden and Hodenpyle also show that dead tubercle bacilli may produce important changes in the body. Vissmann, from his experiments, concludes that the dead tubercle bacillus acts as a highly irritant foreign body upon the animal organism. Injected into the subcutaneous tissue, it produces an abscess. Introduced through the auricular vein into the blood, it exercises a sharp irritation on the connective tissue elements, not only on the alveolar walls, but also on those of the blood vessels and pulmonary artery. In further course, it shows the same influence on the connective tissue of the liver, but not in such high degree. Still feebler is the effect on the kidneys, and in the spleen there is no effect.

The changes produced in the lungs and liver by the irritation of dead tubercle bacilli show, in the first weeks after intravenous injection, such a strong resemblance to young tubercles that it is impossible to distinguish them. They do not, however, in their later stages develop a tendency to undergo caseous degeneration.

Botkin concludes from his examinations of the blood: 1. After tuberculin injections there is an acute leucocytosis in which all forms of the white corpuscles participate. On the day after the reaction the number of leucocytes rapidly diminished, whereby probably the majority of them are destroyed. This is assumed from the increase in the number of blood plates. The appearance corresponds with the period of maximum reduction of temperature, and forms an analogy with the blood crisis of many acute infectious diseases accompanied with fever. 2. The tuberculin reaction occurs in the blood even in cases in which the temperature does not ascend.

Ribbert starts with the proposition that the tubercle bacilli under ordinary circumstances excite inflammation where they are. This inflammation is chronic and granulating. The tuberculous virus has an effect too slow and too little intense to be able to produce acute inflammation and suppuration. Exudative inflammation may occur in tuberculous centers, either when the toxic effect of bacilli is more intense, or the resistance of the tissue is less. Tuberculin reduces the resistance of the tissues.

Rodet and Courmalt reached the same results. Their explanation is that the tissue of the whole body is damaged to such degree by tuberculin as to become less resistant.

The tissues of the body are brought into a slow, granular inflammation by tubercle bacilli. When they are more markedly injured by tuberculin, and thus rendered less resistant to the tubercle bacilli, acute inflammation occurs with hyperæmia, transudation and emigration, and after this process in which tuberculin is eliminated from the body, regenerative processes set in. Hence the severe irritation of the body by tuberculin may produce increase of necrotic processes and may even lead to increase of bacilli, as has been observed in individual places, for instance by Baumgarten. A too lively increase of this process may thus induce suppuration, and such a loosening of the tuberculous tissue as to favor a reabsorption of bacilli, and thus the dissemination of the disease. This danger is recognized on all sides.

Thus von Heussinger sustains the injurious effects of tuberculin in Virchow's sense; that is, the excitement of fresh inflammation, of fresh caseating, infiltrating and miliary tuberculosis.

In accord with this explanation are the following experiments: In order to determine if the direct treatment of tubercle bacilli with tuberculin was adapted to influence their virulence and viability, tubercle bacilli were exposed for a long time in undiluted tuberculin at 37° C., then carefully washed in a solution of common salt, and introduced in rabbits intra-ocular, and in guinea pigs subcutaneous. The local inflammation was in the case of the tuberculinized bacilli in the beginning more marked than in the case of the bacilli not treated with tuberculin, but it disappeared more or less rapidly, and was followed by the appearance of the usual inoculation tuberculosis. The tuberculous ulcer produced in guinea pigs healed itself after a certain time, while that in the control animals showed no tendency to heal. Nevertheless the scars of the first broke open, and there developed a progressive local and general tuberculosis.

Hoppe-Seyler found that after injections of tuberculin, polycholia occurred, which expressed itself in icterus and increased excretion of urobilin in the urine. Hence tuberculin exercises a destructive effect on the blood coloring matter when given in relatively large dose.

On the other hand, as stated, the immediate workers with Koch attribute failures to complications.

Maragliano shows that tuberculin is effective only against tuberculosis, and not against mixed infection with pyogenic bacteria, streptococci and staphylococci. In this regard there is new, or at least more definite knowledge. It is known now that the whole character of consumption, *i. e.*, tuberculosis pulmonum, was not determined with the discovery of the bacillus tuberculosis. This is the keystone, it is true, but there are other stones, if not quite so important, which go to make up the structure. It is now known that tuberculosis of the lungs at least is not a pure process. In test tubes a culture to be kept pure must be secluded from the outside air. This seclusion does not obtain in the lungs. On the contrary, the tubes containing the cultures, *i. e.*, the bronchial tubes, are all open to the air, and are subject to constant contamination. So that human differs essentially from laboratory tuberculosis.

The contaminating bacteria of sputum have been recently investigated by Evans and Babes. Maragliano called attention to the possibility of their clinical signification, as did also Czaplewski, Ziegler and Thorner. Long ago Koch in his work, and after him Gaffky, encountered the tetragonus as an occasional associate of the tubercle bacillus, and spoke of its pathogenic properties.

Cornet on mixed infection, from whom these points are taken, says it is well known to every one who has experimented with tuberculous sputum in animals, that many of the inoculated animals, especially rabbits, often perish in a few days from septic processes. For years in his experiments he avoided the sputum of phthisis florida, and selected rather that of chronic cases, because experience taught him that such sputum rarely causes death by accidental disease. Of the twenty cases investigated post-mortem, and so far as possible *intra vitam*, there occurred twelve times such a dominating presence of streptococci that its work in the production of symptoms could not be questioned.

Petruschky confirms this fact. He found the streptococcus dominant in the great majority of cases studied. In eight of fourteen cases, streptococci were found in the blood and juices of all the organs, whereby the significance of streptococcus infection is sufficiently demonstrated. Pasquale also demonstrated streptococci in various tuberculous processes from the dead body. Therefore the expression "mixed infection" is not exactly correct, because it is not a case of simultaneous invasion. It is rather a secondary invasion of streptococci; that is, it is properly a wound infection, and should be characterized as "a secondary infection." The inundation of the whole body with streptococci induces septicæmia. Hectic fever is distinguished by its morning remissions, by its more or less sudden evening elevation. It is the fever of erysipelas, acute suppurative processes, puerperal fever, produced by pyogenic cocci, in the great majority of cases by the streptococcus. Koch calls this seesaw record the "streptococcus curve."

"In septic phthisis tuberculin should not be used, because in the reaction, increased serous hyperæmia of the diseased lung favors the further invasion of streptococci. Streptococcus invasion is to be feared in every case where cavities exist.

"As Koch said at first: Early diagnosis; early treatment of the first infection. Here is where tuberculin unfolds its beneficence. Every neglected tuberculosis is a menace of the dangers of sepsis."

The discovery of tuberculin established the real epoch in the treatment of tuberculosis, as it constituted the first actual address to its cause. In beginning cases, it dislodges hidden depots of the disease, and makes manifest secreted centers. Thus it frequently makes a diagnosis which could not be established without it. As a therapeutic agent tuberculin has stood the fire of trial, so that its value may now be definitely stated. The use of it is contra indicated in hectic and hemorrhage, and in serious affections of the intestinal canal, conditions due to sepsis and best controlled, if controllable at all, by creosote and cognac. Tuberculin addresses only pure tuberculosis. It is therefore of especial value in incipient cases of lung disease, before asepsis has set in, and in deep seated or secreted latent cases of gland and bone affection. In these cases it soon puts a new phase upon the disease. Cases of anæmia, amenorrhœa, dyspepsia, crypto-genetic fevers, "colds," bronchial catarrh, so-called rheumatism, in reality beginning bone caries, recurrent or obstinate laryngitis, or other of the multiform manifestations of tuberculosis, whose real nature was only disclosed perhaps by tuberculin, gradually yield under its continued and judicious use. The beginning dose should be small, $\frac{1}{20}$ to $\frac{1}{10}$ milligram, and the remedy should be gradually increased, avoiding fever, slowly at first, more rapidly later, up to ten centigrams. It should be introduced subcutaneously always—with the Koch syringe, which should be disinfected with absolute alcohol before and after each use—about the back of the trunk, not oftener than every other day, and always in the morning, that the effect upon the temperature may be studied during the day. Perfectly quiescent cases should be let alone on the principle, *quieta non movere!* On this principle, the surgeon sometimes compromises with an abscess about the hip, and always splints the spine in vertebral caries by a plaster jacket or other fixed support. But here, as everywhere, cases must be individualized. Gland and bone tuberculosis is more apt to be a pure process than lung tuberculosis, which is, as stated, complicated as a rule with subsequent streptococcus infection. The apyretic is the best period for radical address by tuberculin, and cases which show paroxysms or continued recurrent attacks of fever should be subjected to this treatment. The tone and vigor of the body usually rapidly improve under the use of tuberculin, and the uncontrollable evils of septic invasion and the long, slow tortures of marasmus from later dissemination, may be averted in this way.

DISCUSSION.

DR. CHARLES DENNISON, Denver, Col.—I heartily agree with the author, and my experience has been considerable. A year ago I reported on forty-eight cases, before the Gynecological Section, and the successes I reported were attributed by some of the gentlemen to the advantage they thought the climate had in these cases. I have not a doubt as to the correctness of that judgment, and the fact of that aid and the influence that exercise has in these cases, leads me to believe that ventilation of the lung whch is produced by exercise, is an important point in the use of tuberculin. I agree with the author that tuberculin is suited to selected cases, especially of the incipient kind, with this additional proviso, that the case which has advanced to the third stage is equal to one which is incipient, for half of the cases I have treated have been in the third stage. I have had some experience with Klebb's tuberculosin; I have used it in all cases of high fever where I was doubtful about using tuberculin. Commencing with a fifth of a milligram you can work rapidly up to thirty and sixty milligrams. A gentleman living in Milwaukee had a boy seventeen years of age who three or four months ago was growing rapidly ill, wasting in flesh and becoming emaciated. He had a hacking cough but no expectoration, there were no bacilli to be found in the sputum. When he arrived in Denver he had a temperature of 103½ degrees in the afternoon and in the morning it was nearly subnormal, the average being 101 degrees. I was at a loss to know what to do, as I could not discover any bacilli, but I was positive it was tuberculosis; there was solidification of the lower half of the right lung, and with the night sweats and progressive emaciation it could have been taken for pneumonia. I commenced with tuberculosin and the result was remarkable. The average temperature in the afternoon is 101 degrees, the boy is pitching quoits, riding on the electric cars and going to the mountains. I have worked up to 110 milligrams of tuberculosin. I would not dare in such a case to give tuberculin. The tuberculin treatment has been quite as good if the cases were equally well chosen. I have come to rely upon tuberculin as one of the best remedies in selected cases of tuberculosis. The intrinsic value of tuberculin is especially shown in a case of knee-joint disease which had been treated in the hospital as a case of chronic rheumatism, the limbs had been put in splints and the lady kept in a chair for three years. Last July in Vermont, I made a diagnosis of tuberculosis, although there was no expectoration and no history of lung trouble except that the lady, who was 26, when she was 14, had been sent away from home and got well of some asthmatic or throat truoble. I gave her twelve milligrams of tuberculin in ten days. The next February she had an attack of the grippe, which was rather severe and ended in the enlargement of the glands at the side of the neck. She went to the surgeon who had taken care of her before and had the glands removed. A careful examination of the gland was made and giant cells with tubercle cells in the center were found. I wrote to the young lady that

this was a confirmation of what I had told her and she must come out to Colorado and we would try and cure her. She came out last year and I commenced treatment with tuberculin, she continued to have reactions up to twenty-five milligram doses, since when she has had none. She came there on crutches with her wheel chair. I worked up to 110 milligrams, eased off and worked back, giving one dose a week of seventy milligrams. After the dose of 110 milligrams she walked five blocks in Denver, and she goes home without crutches. The cause of her trouble I believe was tubercular joint disease, both knees were swollen.

The difference between tuberculin and tuberculosin is that the albuminous materials are taken out of Koch's tuberculin to make Klebb's tuberculosin; it has about one-fortieth the strength of tuberculin in its healing power but it does not cause fever, it is safer to give where there is fever. There are two kinds of fever which tubercular cases show, one the septic influence of the ptomaines or bacillus, the other the fever which is due to the effect of the remedy, which is a guide in its uses. There is a septic condltion and a tuberculin fever which we ought to distinguish.

Dr. J. T. Whittaker, Cincinnati, O.:—No one will dispute that climate very markedly assists in tuberculosis or any other case. When my patients do not get better under tuberculin I send them away; I have known a great many cases to go out to Colorado.

As to tuberculin and tuberculosin, I do not think there is much difference. I like the fever of tuberculin; it is an indication of the dose the next time. I can assure all the gentlemen if they try tuberculin they will continue to use it in these cases. If they will only use the Koch's series and not try to improve upon Koch's method, they will come to the conclusion he had at first. The syringe is nothing more than an exaggerated dropper; it has a rubber bulb, but no piston or plunger. Absolute alcohol is first drawn up into the syringe, and then the dose, and only takes the time of a few seconds. If the precaution is taken to draw the alcohol into the syringe again it disinfects it absolutely. I have used it every day for several years and never got the least infection. What impresses me most is these cases in which we can make an accurate diagnosis; where the individual seems to be in a decline with chill and fever every week or two, which we used to call malaria, and sometimes would yield to quinine and sometimes not. I use tuberculin in all of these cases, and they are put on their feet in two or three months; it does not take two or three years, as is commonly believed. If there seems to be any danger about it, a small dose of one-twelfth of a milligram can be given. We usually make the diagnosis with half a grain of this 1 per cent. solution in two or three days. You give the mother the thermometer and teach her how to use it; to take the temperature about one o'clock and again in the evening, and give you the record. When the diagnosis is established the first thing the physician notices is the difference in the tone of the patient; they feel better and begin to look upon the physician's visits with pleasure. We soon find that we can almost double the dose every other day, and in the course of a month the patient begins to gain courage and feels better in every way; sometimes there is reduction in weight and bad feeling, then we must go slower and reduce the dose. These patients do not show the same tendency to relapse as those who get well under creosote and other kinds of treatment. I have read of cases where relapse occurred, but it impressed me as not so often under tuberculin as other kind of treatment. I believe tuberculin is a specific of tuberculosis; I feel confident that the remedy is gaining ground and establishing itself. We see a flood of light thrown upon the failures in the fact that the cause was a streptococcus and not a tubercle bacillus at all. The tubercular bacillus multiplies very slowly; it is very different with the streptococcus, that floods the whole body. Anybody who has seen those beautiful cross sections of muscles filled with streptococci knows what it is, and why the patient has a fever they call in Germany the streptococcus fever. We have tried to fight the streptococcus with creosote, but we have no remedy that will destroy it.

Dr. Montgomery, Pennsylvania:—We country doctors do not know much about tuberculin, and we do not like to give a medicine unless we know something about it. What are its constituents and chemic properties?

Dr. J. T. Whittaker, Cincinnati, O.:—Tuberculin is the product of the growth of the tubercular bacillus in a certain salt borrowed from the body of the bacillus and cultured in glycerin. The action is to produce a real inflammation and make the tissues less resistant. Ordinarily we treat the condition by making the tissues more resistant, but the tuberculin goes at it the other way, and excites a real inflammation, and after it subsides the degenerative process again sets in; then of course the physician is dealing with theories not as worked out by himself, but by those who have studied them for years. That is the way in which tuberculin is presumed to act; there is no definite knowledge on the subject, especially in those obscure cases in which it is difficult to determine the cause. I know the lack of confidence in the remedy arises from lack of use of it, and I am convinced that if a physician would have a syringe and use it in this way he would at least know whether he had a case of tuberculosis or not. Tuberculin clears up the diagnosis. I have seen cases where the injection of tuberculin did not create the reaction, and I infer the diagnosis was wrong. Tuberculin will give the reaction and nothing else will. The product which is derived from any other bacillus does not have the same effect; it is so peculiar and so positive that anybody can read the signs.

Dr. Whiting, Janesville, Wis.:—I would like to ask Dr. Whittaker whether his experimentation has been done in private family practice or in public institutions?

Dr. Whittaker:—In both. I always have from fifteen to twenty cases under my treatment at the hospital, and I suppose as many in private practice.

BRIEF CLINICAL MEMORANDA.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY HENRY D. DIDAMA, M.D.

SYRACUSE, N. Y.

1. An Available Catheter Lubricant.—Olive oil, glycerine, cosmoline, are the ordinary materials used to lubricate the catheter. As a rule they are satisfactory, although the oil parts with its sweetness if kept too long, and the glycerine irritates certain urethras outrageously. Cosmoline is pleasant enough, but the bottle is apt to be misplaced or empty when needed. Moreover, there are nice elderly people who have chronic retention from enlarged prostate or other difficulty and who are forced to draw their urine because they can not void it.

They are well enough to go to the store, shop or church, and they always carry a catheter or two curled up in their pockets. But a bottle, in addition, is sometimes mussy and always a bother; and so, rather than carry the needed emollient or call on a neighbor for it, many a poor wretch remains reluctantly at home.

But he need not stay at home, nor take his bottle,

nor call for assistance. Saliva is an excellent substitute for any of the articles mentioned.

The objector, who, quite likely, has never used nor prescribed, nor even heard of this material, at once calls attention to the epithelia and animacules which abound in the oral cavity. Saliva, he claims, impregnated with these objects must necessarily introduce dangerous septic material into the urethra and bladder and cause a troublesome if not fatal cystitis. But saliva is not necessarily poisonous. Ever since the time when Lazarus sat at the gate of Dives, dogs have cleansed and insalivated the sores of beggars and their own punctured wounds, without harmful effect. Indeed, it never was the hair of the dog, but his saliva, that cured the bite.

Remembering now the diet of the ordinary dog, we can easily imagine that human saliva is at least as cleanly as the canine variety, and that the oral microörganisms are scavenger bacteria.

However, this may be, experience is the best teacher. And numerous persons, who have had practical personal knowledge, stand ready to testify that the lubricant which they can easily have on hand from the reservoir at their tongue's end is not only available and harmless but preferable to any other which they have employed. (Of course the saliva harbored by foul mouthed people is not commended.

2. Preparing Hemorrhoids for Injection.—Every one is familiar with the radical treatments which have been and are in vogue for piles:

The ligature, following transfixion and followed by excision; the clamp, the cautery, the caustic; Whitehead's operation, which removes once for all the hemorrhoidal area; and the injection of carbolic acid which permits the patient to keep on foot and attend to his business. All these have their advocates, excellences and drawbacks. Whitehead's, with Marcy's modifications, is probably the best.

Carbolic acid injections have, without doubt, (even after making allowance for the false claims of peripatetic quacks) cured many cases. But these injections occasionally do much mischief. The material used sometimes extends up the hemorrhoidal veins, causing intense and prolonged pain and widespread and dangerous sloughing.

As so many pilebearers are business persons, who can not afford, or are impatient at, a week's restraint in bed, it is unfortunate that so much peril threatens the quick and easily performed and comparatively painless injection method.

It is pleasant to know that in many cases this peril can be averted. In this wise:

1. Anæsthesia by ether or A. C. E.
2. Abundant digital dilation of sphincter, which of itself is often a prolonged relief.
3. Bringing down the tumors.
4. Ligating those which have a suitably small pedicle and tying the ligature with a bowknot.
5. Injecting into each tumor, according to its size, six drops or so of this or a similar mixture: Carbolic acid one part; 8 per cent. solution of cocaine two parts; glycerine two parts.
6. Untying and removing the ligatures after a thorough admixture of the injection with, and coagulation of the blood in, the tumor, which may require from five to ten minutes. This retention of the blood in the hemorrhoid, till after thorough admixture and coagulation have taken place, prevents dreaded extension up the veins and to neighboring parts; the cocaine moderates the pain; the pile hardens and in due time drops off. But as many hemorrhoids have not a suitable pedicle for temporary or permanent ligation, and as dilated venous radicals may be left which will develop into future tumors, the device described is limited in its application and can not always give quite the satisfaction and relief from apprehension which the Whitehead operation affords.

3. Facile Reduction of Prolapsed Hemorrhoids.—Much suffering is occasionally the result of protruding piles. The victim usually manages, by taking compound licorice powder at night or some saline in the morning, to obviate constipation. Or he uses an enema after breakfast to secure a movement. The hemorrhoids descend but they are replaced with little difficulty. Sometimes, however, they are very much enlarged or sensitive, and long-continued efforts to put them back prove a failure. The sufferer regrets that he has not heeded the advice of his neighbors and submitted to an operation. Regrets, however, are unavailing to give present relief. He sends for the family physician. The doctor works faithfully, inflicting much pain, and happily accomplishes his object. But not invariably. Now and then his best efforts are fruitless, and anodyne ointments and hot cataplasms are called to his aid. Meantime the suffering continues with little amelioration. The soothing influence of the applications becomes manifest after a long time and the wretched tumors are put back where they do the least harm.

A repetition of this misery and delayed relief is not an infrequent occurrence. Still the long-suffering victim dreads a surgical operation of any kind, and tries to hope that each attack will be the last.

Now it may be some satisfaction to the doctor, as well as great comfort to the patient, to know a comparatively easy method of effecting reduction. This is it: Posture may be important, but the best one is not always required. In moderately severe cases the patient may be on his back with knees drawn up. If the hemorrhoids are very tender from strangulation and manipulation, cocaine should be applied till analgesia is fairly well established. Then the parts should be thoroughly lubricated with vaseline, and the tips of three or four fingers of each hand applied to the purple projections. Steady pressure is to be applied while the patient is ordered to press down as he does in the defecation of hardened feces. Instinctively, and almost invariably, he shrinks and draws away from the pressure on the painful swellings, at the same time puckering the already too contracted anal orifice. But when he is made to comprehend that puckering renders reduction impossible, while resolute and persistent straining down relaxes and opens the orifice and allows the swellings to be forced back into the rectum, often semi-instantaneously, he will govern himself accordingly. Sometimes the performance can be terminated more speedily by having the patient assume a squatting posture, after the preliminaries have been attended to. Then the straining down seems to be more thorough and efficient, and the piles, liberated from constriction, slide homeward with little compulsion.

This is the facile reduction of prolapsed hemorrhoids; and the patient can be taught to accomplish it early and easily without the aid of the physician.

4. Ready Relief for Lumbago.—Pathologists have

not agreed as to whether lumbago is myalgia, rheumatism or myositis. The arguments in favor of each theory are so nearly balanced that the busy practitioner can afford to let the discussion continue while he attempts to cure his patient.

The symptoms of the complaint will not be described. They are well known to you all—emphatically to those who have experienced them. You do not mistake calculus or nephritis or abscess or spinal disease for this disorder. You are doubtless familiar with the treatment commended by Motherwell a hundred years ago: blisters and issues on the thighs, suitable evacuations, opiates and mercurial alteratives.

You may not know that the Rev. John Wesley, in his Primitive Physic, spoke favorably of a plaster to the back and "balsam of Capivi." But you all have read the formidable list of remedies in the very latest text books, and you may have employed many of them in dismal rotation. I call to mind a few samples: Prolonged rest: sulphur, externally and internally; guaiac; dry heat; moist heat; liniments; poultices; salicylates; hypodermics; faradism; galvanism; belladonna plasters; mustard; iodide of potassium.

These, and more than these, have been and still are highly commended. Under their vigorous, consecutive and long-enough continued use, favorable sequences have actually occurred.

The writer of this paper has no condemnation to pronounce on any portion of this treatment. But he does not employ it. For ten years or more, personally he has experienced, and very many times he has afforded ready relief by the application of large dry cups along the entire lumbar region. The patient, hardly able to walk or even move, is seated on a chair with his bared back turned towards the operator. If obtainable, four conical glasses (such as are used to collect the sediment of urine for microscopical examination) may be employed to hasten the operation.

With a little swab dipped in alcohol the conical cup is mopped out, the alcohol is ignited and the cup applied. The procedure is continued with the other cups till the four are adherent at the same time. In five minutes or so their position may be changed, and the entire operation need not occupy more than fifteen minutes. The result is almost magical. In nearly every instance, the patient rises from the chair, walks about with ease, bends his body without pain in all directions, and blesses you with a cheerful recompense. If he needs any tonic or any alkaline diuretic or laxative, you prescribe or dispense and he departs rejoicing. You order him to return in a day or two if the difficulty reappears; but the relief is usually not only prompt but lasting.

The blood is drawn from the depths of the congested and painful muscles to the surface; and if occasionally a repetition of the operation is required, the patient, who has been made in a few minutes more comfortable than, under the old plan of treatment, he was in weeks, never begrudges the time or expense.

To be entirely satisfactory, the conical glass cups should have a diameter at the mouth of three and one-half or four inches and a depth of six inches. If these cannot be obtained, deep goblets or beer glasses may be used. My friend, Dr. A. S. Edwards, once employed some enormous cups (called "schooners" I think) and gave me joyous relief after a long period of useless pottering with the orthodox remedies.

If the little globular cups with collapsible rubber attachments are substituted for the large glasses, the result will be unfavorable and exasperating.

DISCUSSION.

Dr. Frank Billings, Chicago:—If anything has made modern surgery successful it has been cleanliness in the fullest sense of the word, without the use of so-called antiseptics. Clean water is now used where formerly antiseptics were used to kill so-called bacteria. In the use of saliva as a lubricant. to my mind the patient is in constant danger of infecting himself, and I speak of this from experience in spite of my being a younger man than the reader of the essay. A very prominent gentleman, while in office suffered from abscess of the prostate gland. He was of the age when he had this enlarged hypertrophic gland that he suffered severely from the abscess, with consequent inflammation of both testicles, and this was repeated many times. He finally came to me and investigation showed that for years, ever since his trouble began, he had been using a catheter to empty the bladder and had used saliva as a lubricant because it was at hand. He had infected himself, and through reformation of his methods, not only in not using saliva but teaching him how to clean his catheter and even to go to the trouble of getting some lubricant that was known to be clean, I stopped it entirely. That has been my experience in a few years with three old men, and I cannot help protesting against that part of the doctor's paper. The saliva is full of bacteria and while it contains non-pathogenic bacteria, it also contains pathogenic bacteria and sometimes contains pus, making bacteria. If an individual has to use the catheter he ought always be taught to cleanse the instrument and to use some aseptic lubricant.

Dr. Jenks, Keokuk, Ia.:—I like the doctor's terse, rather short and numerous way of putting these facts. There are a great many things to be learned from just such a paper as that. We do not pay enough attention as general practitioners to this subject. I believe more men are suffering from the general effect of hemorrhoids than any other disease that afflicts humanity, and physicians are apt to pass it over and say take a little powder, and let it go. We ought to educate the people to the idea that there is a cure for hemorrhoids. They cause much mortality by complicating a case when the patient gets sick, and the sooner a man gets cured of his hemorrhoids the better his chance for life as well as happiness. For that reason I think the part of the paper speaking about simple matters and making men comfortable without operation is a very important thing to come before the Medical Section of this Society. I do not believe in carbolic acid injections in the ordinary way; they do more harm than good and are more painful than the electrode; the way the doctor uses it it has probably less danger. There is no getting around the fact that if you take a case and give an anæsthetic, ligate the hemorrhoids and cut them off and put the patient to bed, it is better than giving carbolic injections.

Dr. Chas. Dennison, Denver, Col.:—I was going to say something on the same line, because I have lately had an experience which forces the subject on my mind. We have a quack institution in Denver from which a patient came to me about four months ago who had an ulcer in the posterior pharyngeal space, and upon examination I found ten tubercular bacilli in the field. The history was he had been under that institution's care for five weeks, and they had used the same instrument that had been used on other patients in applying something to the throat, and the throat was con-

stantly getting worse. We have made a great many examinations, and I kept a careful record of my cases by examination of sputum, and the frequency with which I have found from one to 1,000 bacilli in the field is so uniform that the chances of getting tubercular infection would not be unimportant in using saliva as a lubricant. We do not know the condition of the changes of the body which precede the tubercular bacilli, and until we do know that we can not be perfectly sure what condition may exist in the saliva that may be favorable to infection by tubercular bacilli. It seems to me the necessity for the innovation is so slight, and there are substances that would be nearly as handy, that it would be better perhaps not to run the risk of such device.

DR. AULD, Philadelphia.—I came in as the speaker began to read on the subject of lumbago. The methods of treatment recommended are those which usually obtain. I was disappointed that nothing was said in regard to the probable pathological conditions which maintain in that class of cases. We all know they are very closely associated with rheumatism and the rheumatic tendency, and that might be sufficient for the giving of salycilic acid or potassium iodid. I know that the faradic current rapidly or slowly interrupted is very efficient, sometimes a single sitting gives all its irritating effect upon the nerve and its stimulating action upon its protoplasmic cells which compose the muscular structure and the other associated structures. Good results are frequently observed from the use of acupuncture, that is the introduction of the single needle; it is certainly a very excellent method of treatment but is not always successful on account of its decidedly local influence. There is another method of acupuncture with which probably you are familiar; I refer to the instrument invented by Bohnsheim fifty or sixty years ago. It consists of a small disc containing thirty needles, penetrates the flesh three-eighths of an inch. By having that disc connected with a spring, we make a spot about five-eighths of an inch in diameter. A half dozen of these can be made in a few moments. That answers the same purpose as acupunture, is more successful and without danger.

Concerning the probable pathological conditions we have to deal with in the muscle substance which is composed of protoplasmic cells, we have encircling those cells the lymph, and if we give salycilic acid or iodid of potassium or other medicine, we depend upon its action, not through the blood but through the lymph. The medicine is given up by the blood and distributed through the system. The protoplasmic cells which are involved have become deranged, and from their inability to throw off carbonic acid and other products the metabolic processes are hindered, and we have more or less swelling and pain. We have in addition the fascia covering the cells and the tendons which are nearly in co-extension with the fascia. The fascia cells and tendons are not so active in their nutrition as the protoplasmic cells of the muscles. Suppose we give a medicine which will immediately stimulate those protoplasmic cells. We know that mercury affects especially the liver, and we know it does that through its continuous absorption until it has permeated through the system. We have a remedy in the poison, sumach rhus.

DR. H. D. DIDAMA, Syracuse, N. Y., in closing the discussion, said: In regard to the use of saliva, I never once recommended it. I would not recommend it; I spoke of it as an available lubricant mentioned to me by patients who had used it for years. I was taught when a student that in using the catheter in a woman no exposure was to take place, the catheter is clean, the meatus is clean and the catheter is never permitted to touch anything, is not laid down on the bed anywhere, but passes directly into the urethra and every precaution taken for cleanliness, so that cystitis never occurs from the use of the catheter. I am glad this question has come up. I said in regard to it that a person with a foul mouth should not use the catheter in that way.

In regard to lumbago, the title of that portion of my paper was "A Ready Relief for Lumbago." We all know about these things that have been mentioned and know about different views of the pathologist. I don't care about the pathology; for ten years I have been helping patients who came to my office, and have had lumbago myself. What we want to do is to relieve the patient if we can and let him go about his business. A friend in New York telegraphed me to come, because he knew about the treatment with these large cups. He tried to have his physician apply them, but this young physician said he did not think the treatment in the Bellevue Hospital could be improved upon by any physician who lived in Syracuse, so he would not apply them. I went and in ten minutes the patient was relieved.

THE TREATMENT OF ENTERIC FEVER BY COLD BATHS.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY W. GILMAN THOMPSON, M.D.
NEW YORK.

The treatment of enteric fever by cold baths according to the Brand system, *i. e.*, by sudden immersion in cold water accompanied by vigorous rubbing, has been slowly but steadily gaining adherents in this country. My own experience with it includes ninety-five cases treated during the past three years at the New York Hospital, where Dr. Peabody first employed the system, and at the Presbyterian Hospital, where I introduced it last year. While the number of cases thus far treated at these two institutions is not yet large enough to furnish absolutely convincing statistics, the figures already obtained are certainly significant. Thus 340 cases treated by other methods at the Presbyterian Hospital, New York, from 1882 to 1892 gave a mortality of 17.8 per cent., and 501 cases treated by other methods at the New York Hospital from 1877 to 1889 gave a mortality of 19.4 per cent. Ten years of "expectant" treatment among 1,305 cases in various New York hospitals showed a death rate of between 20 and 30 per cent. (Delafield). By the Brand system the mortality of typhoid fever in both the above institutions has been reduced to 7.5 per cent. The cases herewith reported are not selected cases; that is, with the exception of patients brought into the hospital actually suffering from severe hemorrhage or collapse (and they number only half a dozen), the bathing or "tubbing" treatment is applied to all. The type of enteric fever with which we meet in New York city is usually severe. The New York Health Board reported 7,712 cases from 1876 to 1885, with a mortality of 41.28 per cent. The temperature runs high and hemorrhage and other serious symptoms and complications are of frequent occurrence. Moreover, many hospital typhoid patients do not enter the institution early, but wait until some urgent or critical symptom alarms them, and a decided majority are not seen before the tenth day, while many are received later. It is doubtless due to these causes that the mortality among

patients treated by "tubbing" in this country is not so small as it is in the French and German army hospitals, where with many thousand cases it has fallen below 2 per cent.

The method of "tubbing" which I have employed is as follows: A portable tub on rollers is placed at the patient's bedside and partly filled by a hose with water at 70° F. When the patient's temperature rises to 102.5° F. he is given half an ounce of whisky and in a few minutes is lifted naked into the tub, in which there is enough water for the complete immersion of the body. In some cases cold water from a pitcher is poured upon the head. The patient is left in the tub for fifteen minutes, during all of which time he is vigorously rubbed over the entire body by two nurses, being turned from side to side occasionally to facilitate the friction of the back. He is then lifted on to blankets on the bed and rubbed dry. He is then given a glass of hot milk with malt extract and left to sleep, which he usually does, owing to the soothing influence of the bath. Between the baths the patient lies on a blanket and is covered only by a sheet, to favor evaporation from the surface, and in severe cases a compress wet in cold water and large enough to cover the chest and abdomen is constantly worn.

While in the tub many patients begin to shiver in five or ten minutes, but the bathing is persisted in and they soon cease to shiver. In young children, and exceptionally in adults with very poor circulation, a bath of ten minutes may be better than fifteen. Many patients, especially those in whom treatment is begun early, do not require over a dozen or fifteen baths. Often three or four a day are sufficient. In bad cases they must be given once in three hours both day and night. I have several times given eighty or ninety baths to one person. On only five occasions has it been necessary to discontinue the treatment on account of the serious objection of the patient. These were all exceedingly nervous persons (three of them men), and they objected continually to everything done for them, being equally intolerant of the Leiter cold coil and alcohol sponge bath.

One of the house staff always superintends the giving of each bath, and as a rule, with a little tact and encouragement objections on the part of the patient are readily overcome. To highly nervous subjects it is well to give an initial bath at 90°, to accustom them to the process. It often happens that the temperature, especially if moderate, is but little reduced after the bath, but as a rule a reduction of between 2° and 2½° F. follows and the temperature remains low for two or three hours, when it again may rise slowly. The temperature often continues falling after the bath. Even in those cases in which no reduction of temperature results, the patient's general condition remains phenomenally good. In fact, one scarcely ever sees the typical "typhoid condition" among patients who have been systematically "tubbed."

Delirium is the decided exception, not the rule, and all the nervous symptoms are lessened; the tongue is moist and clean, the digestion and appetite are remarkably good, tympanites is not prominent, the skin is healthy and active, bedsores do not occur, the urine is abundant, sleep is natural, nutrition is excellent, the facial expression is clear, the eyes are bright, the voice is strong, and the pulse is full and regular; in a word, the whole clinical aspect of the case is completely altered. The occurrence of menstruation need not interrupt the treatment, and in one successful case forty baths were given although the patient was five months pregnant.

Seven deaths occurred from the following causes: Four from intestinal perforation and peritonitis, two from hemorrhage and one from pneumonia. It can hardly be claimed that the baths precipitated either the fatal hemorrhage or perforation, for the majority of cases with hemorrhage recovered, and of the cases of perforation one had had thirty-six baths and another forty-three before that casualty ensued.

It is true that the "tubbing" has neither shortened the ordinary duration of the disease in the cases which I have treated, nor has it altogether prevented mild relapses, which followed in nine cases, but complications have been very few and the general result has been remarkably satisfactory.

Among the complications observed were intestinal hemorrhage in six cases which recovered, bronchitis, otitis twice, bursitis, ischio-rectal abscess, and the unusual phenomenon of a large abscess of the thyroid gland. Several patients who recovered had temperatures ranging above 106° F. before the treatment was commenced.

The other patients all did extremely well; several seemed to enjoy the effects of the "tubbing," and in those who were dull and lethargic on admission the baths had a truly wonderful effect in improving the apathetic mental condition and the pulse. The chief characteristic of nearly all the cases treated by bathing was the absence of the nervous symptoms so commonly observed, such as stupor or delirium, subsultus, etc. None of the cases received any antipyretic medicine while the bath treatment was in progress. Several patients complained of tenderness and pain in the calves of the legs and soles of the feet which gave considerable annoyance. The symptoms resembled a mild peripheral neuritis. Attempts were made to relieve the pain by the local use of a liniment of menthol, chloral and camphor, but without decided benefit. The symptoms subsided after a week or ten days. It is well known that such cases occur without the baths, and there was a similar complication at the same time in a patient who was not put into the tub at all. The symptoms merely seemed somewhat more frequent among those who were bathed. Those men who had hairy chests showed a slight papillary eruption around the hair follicles which caused slight burning. It might be avoided by cutting the hairs. Patients should pass their water before entering the tub, otherwise the cold is apt to make them micturate. With a large service it is not practicable, nor is it necessary, to change the water after each bath, unless the patient happens to void feces or urine in the tub. This accident would be a serious objection to the "tubbing," but fortunately it seldom happens.

The objection is often raised against the Brand method that the expense and trouble are too great. I have had the curiosity to form an estimate in regard to this matter.

Twenty-two cases taken without selection from the records of the Presbyterian hospital received collectively 372 tub baths, or an average of seventeen each. Seventy-two cases from the New York Hospital records received 2,052 baths, or an average of over twenty-eight each. At least half an hour is consumed giving the bath and caring for the patient

immediately before and after it, and the services of two attendants and one of the house staff are required during most of this time. To give 2,052 baths would therefore occupy three persons for 1,026 hours or over forty-two days.

It is useless to undertake the Brand system unless one is prepared to carry it out with careful detail and much labor. It is true that this entails considerable expense and trouble, but the arguments so often used against it can not long prevail in face of accumulating statistics of greatly lowered mortality, now covering a period of nearly thirty years. On commencing the use of the Brand system I was quite skeptical in regard to its value, for experience some years before with the older method of putting patients into a tub of water at 90° F. and gradually cooling it without employing friction, had proved very unsuccessful, but I was soon converted by its advantages, and in the autumn of 1892 I had a personal experience with cold bathing which proved so valuable to me that I may be allowed to refer to it here. At that time I had a mild but unmistakable attack of enteric fever, and "tubbing" was commenced upon the fifth day. The baths were given for the most part at 75° F., but several were at 65° F. The former temperature I found very endurable, but the latter was uncomfortably cold. The baths had but little effect in reducing the body temperature but I always experienced immediate relief from the general aching and muscular pains which were particularly severe. It is not agreeable at any time to be taken out of a warm bed and suddenly immersed in cold water, but the after effect was so soothing and the favorable influence upon all the symptoms was so pronounced that the temporary discomfort was easily endured.

Delirium did not occur, and the digestion was excellent. I found that close attention to minute details added greatly to comfort. There was less shivering when the *back* was vigorously rubbed as soon as the water was entered, and the friction should be constantly and vigorously maintained over the entire body which is easily turned if completely immersed in the water. The alcoholic stimulation should be given at least fifteen or twenty minutes before the bath instead of immediately before, in order to secure its absorption in time to meet the shock of cold. On being lifted into bed again the body should be rubbed thoroughly dry and a refreshing sleep almost invariably follows. My experience also demonstrates the ease with which this treatment can be conducted in private practice. A large ready-made tin bath tub can be bought for a few dollars, and placed by the bedside, raised on two blocks of wood to a height convenient for the rubbers. It is filled by a hose from any neighboring faucet, and the same hose will siphon the water out again when desired.

In conclusion, I may say emphatically that under the Brand system in nearly all cases the patients are both subjectively more comfortable and objectively much stronger and better nourished than under any other treatment which I have followed. We should bear in mind that the object of the bathing is not alone the reduction of temperature, but is in great part directed to stimulation of the central nervous system through the agency of the cutaneous nerves, both by the sudden shock of cold and by the mechanical stimulus of friction applied over a very large surface. The method thus becomes a definite systematic treatment which has yielded far better results than any symptomatic or merely "expectant" plan.

SOME EFFECTS OF THE TAKING OFF OF THE CEREBRO-SPINAL PRESSURE. ANEMIA OF THE BRAIN AND WOUNDS OF THE SINUSES.

Read before the Missouri State Medical Association at Sedalia, Mo., May, 1893.

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It does not fall to the lot of every practitioner to observe the effects of reduced intra-cerebro-spinal pressure, and as cases of this character are liable to occur with greater frequency, now that cerebral and spinal surgery has become more popular, and is being more frequently done—it may not be amiss for me to detail the effects I have observed in a few cases.

The first was a case of spina-bifida, which I saw and examined in consultation in 1869. It was in a child less than a year old, and was in the lower part of the lumbar region. This consultation was with a view of determining what—if anything—could be done for its cure. It was decided to attempt draining off, slowly and gradually, some of the fluid that had accumulated in the sac, at the same time making pressure over the tumor in order to equalize the pressure on the brain. A slight puncture caused a complete collapse, and in less than twelve hours the unfortunate infant was a corpse—having died in convulsions. From that time on to the present I have had a very wholesome fear of interfering needlessly with the cerebro-spinal fluid, or of the cavities in which it is contained.

Ordinary acute cases of injury to the brain fortunately very rarely give us trouble. The arachnoid and dura mater speedily becoming aglutinated, and the subdural space is very speedily sealed up. The relief to the intra-cranial pressure, at the point where the bone has been removed, shuts the space up so that we rarely in acute cases have more discharge than is ordinarily found in wound secretions. Not so, however, with chronic cases, or cases where the cerebral mass can not so press against its bony covering. The following cases will forcibly illustrate the points I wish to make:

A little over three years ago Bertha Thalin was brought to me for a tumor on her head, that came there after a severe injury received when she was but nine or ten months old by falling down the stairway in the arms of her nurse. (At the time she came to me she was a little over seven years old.) The injury was on the left side of the head, a little above and in front of the parietal eminence. The right arm and leg were both partially paralyzed, and both were a good deal undeveloped. She was able to walk, but walked imperfectly with her right leg. She used her hand, but with even less celerity than the leg. Otherwise she was perfect in every respect. Bright, intellectual, cheerful and had enjoyed ordinary good health.

The tumor on the left side of the head was quite large, and occupied a space an inch and a half wide

by two and a half long, and extended obliquely from above downward and forward. It showed no evidence on its surface of ever having been wounded. It pulsated violently. The pulsations being synchronous with the action of the heart. It was not tender to pressure, and when compressed produced a slight dizziness. Beneath the pulsating portion I could find no bone. However, bone appeared to form the wall of the tumor, except the space at its summit where the pulsations were most pronouncedly manifest. My diagnosis was meningeal hydrocele, due to some irritation within the dura mater, and that the displacement was the result of the hydrocele itself. I determined on opening the tumor, cleaning out its cavity, and trying if possible, to completely obliterate the sac. To this end I made an incision through the scalp, carrying it over the summit of the tumor, and found when I opened into the cavity of the tumor there was found an abundance of clear, limpid cerebro-spinal fluid. On attempting to farther explore the cavity, a piece of bone an inch and three-fourths in length projected down toward the brain at one end, and was loosely attached to the bony wall of the tumor by the other. These I separated and removed the bone, washed the cavity out, dissected out all of the wall of the sac that I possibly could, without taking too much of the brain substance away; closed up the scalp wound, with the exception of a small point for drainage, and dressed antiseptically.

I found, however, after a few hours that my dressings were exceedingly wet, and that a large quantity of fluid from somewhere was saturating the dressings, necessitating their removal and renewal. The general condition of my little patient was good, with this one exception. By a good deal of care I succeeded in maintaining the wound in a thoroughly aseptic condition, but found the discharge of cerebro-spinal fluid exceedingly great. I removed my drainage tubes, injected the cavity again and again with a weak solution of iodine, but to small purpose, the quantity of fluid discharge remaining about the same. I found my patient—despite the best nourishment I could give—becoming weaker from day to day, and in a week after the operation she was unable to stand. She became emaciated, and in two weeks I was fearful for her life.

The quantity of discharge will appear incredible to any one who has not had experience with it. A quarter of a pound of absorbent cotton placed over the head, would be thoroughly saturated in two hours.

I now had recourse to compression and attempted to seal up the wound, but with nearly the same experience, no very marked improvement in the amount of discharge taking place. This condition of things lasted about three weeks, and by the ordinary process of granulation the wound closed, and she rapidly regained her strength. I observed closely during the period of her convalescence the very marked anemia and the pronounced weakening of the mental faculties, produced by this loss of cerebro-spinal fluid. From being bright, cheerful and intellectual, she became petulant, sullen and almost incapable of any intellectual process whatever. She has not improved as much physically since that time as I had hoped. Her limbs, though better developed than they were when the operation was done, have not been completely restored by any means. The limbs are both small, and less under the control of the will than those of the opposite side. The resulting anemia was only slowly recovered from.

Last December I was called in consultation with a neighboring practitioner to see a boy, who in a fight with one of his companions had received a stab wound in the back of the neck. The physician who was called to attend him dressed it in the ordinary way, and expected it to heal as an ordinary incised wound would, (perhaps by some suppuration) but as the wound was small and thought to be not very deep no one looked for bad results. Ten days after the receipt of the wound I was called in. I found him lying in a bed, the upper half of which was saturated with the fluid that was continually flowing from the wound in the back of the neck. On examination I found the wound had been made with the point of an ordinary jack knife, thrust into the neck immediately under the occiput, and had evidently entered the cranial cavity in the suboccipital space. The fluid that was emerging from the wound was as clear and limpid as spring water. It was albuminous in consistency and slightly alkaline in reaction. It flowed rapidly; even when sitting up it would drop at least 80 to 100 times per minute. A probe passed into the wound evidently reached the medulla oblongata and produced great pain, with a tremulousness of the extremities, and as he expressed it "a queer sensation all over him." He stated that when he first received the wound it knocked him down, and for a minute or two he could not get up. He did not know that the boy had struck him with a knife, but thought he was stunned. He did not know he was cut until some one said, "there is blood running down your neck; the boy has cut you."

From being a strong muscular boy, and a general all around tough, he was in ten days unable to walk from the bed to a chair. His intellectual processes were dull and sluggish. He had no fever, his temperature being normal. His pulse rapid but very feeble.

After cleaning the wound and its surroundings thoroughly I proceeded with a long silk suture passed through the neck deeply on each side of the wound, to bring it together, and then dressed it in the ordinary antiseptic manner. The dressing was left in place for a week, and when it was removed the sutures were also removed. Healing was found to be complete, and no further trouble from that source was experienced.

It was three weeks, however, before he was able to be out of the house, although there was nothing wrong with his general health. The pronounced anemia due to the great loss of cerebro-spinal fluid had thoroughly debilitated him, and it was over a month before he was again seen on the streets.

These cases have served to convince me that a great loss of cerebro-spinal fluid has practically the same effect on the general health that great losses of blood have, the symptoms being almost identical and the recovery almost as slow. The statement will, I have no doubt appear extravagant in view of the fact that no red blood corpuscles are lost, and that the fluid is purely albuminous and should be speedily, very speedily reproduced. The symptoms during the time are precisely the same as those of loss of blood. The cranial bones form a close bony cavity that always hold just so much. If this cere-

bro-spinal fluid is drained off, there ought to be an engorgement of the brain with blood. Of this, however, I have never seen the slightest symptoms in any manner whatsoever, but all the symptoms of a profound anemia.

EFFECTS OF ANEMIA OF THE BRAIN.

Of the effects of anemia of the brain, I wish to complete the report I made to this society at its last meeting at Purple Springs. I had ligated the common and internal carotids and internal jugular vein for gunshot wound in the side of neck, producing an aneurismal varix in the side of neck. (See last year's report of Missouri State Medical Association.)

Abraham Grayson, the subject of the report was, at the time of the meeting still a convalescent at the hospital. The progress of his case towards a complete restoration was much slower than I had anticipated at that time. He could carry on a conversation that required no, or very little, effort of memory. But even this very soon wearied him, and after a few minutes his answers were either entirely incorrect or the verbiage was incoherent. If, for instance, he was suddenly asked his name, he was unable to tell it. He, however, knew what his name was not. If other names were called he knew they were not his own, and would promptly answer "no," and when his own name was called he would as promptly answer "yes." This condition continued without much improvement, apparently, till the latter part of July, when I noticed a very decided improvement in his general condition. He regained flesh, walked with a perfectly steady gait, ate and slept well, and when spoken to responded promptly and intelligently to the question. The only thing that appeared to distress him was a continuous effort at memory. His pulsations would become rapid, his respiration increase in frequency, and in general he presented a picture of great mental excitement.

By the first of September he had so thoroughly convalesced as to be able to be discharged, and was discharged from the hospital, in every way so far as I could discover, perfectly restored to health. The mental hebetude, as well as amnesia, lasted much longer than any one would have supposed from the manner in which he progressed for the first three weeks after the operation.

From the sudden and profound anemia of the brain area involved in cutting off the circulation through the middle cerebral artery on the left side, there must have been sustained by the brain substances an amount of injury that no one had contemplated. Hence, I take it, the slowness of recovery.

WOUNDS OF THE SINUSES.

Now that operations on the skull are so frequently being done, it is not at all wonderful that wounds of the sinuses will more and more frequently occur. The older members of the profession among us, will easily recall the instructions that were always given us, to avoid certain areas of the skull in trephining operations, so as not to wound the sinuses. The operation of trephining in those days was done with relative infrequence. The mortality following such operations was always high, and the surgeon hesitated long before making the attempt.

The course usually pursued was to wait until some profound manifestation of compression, inflammation or suppuration had set in, before active interference was undertaken, and then only to extend his explorations as far in as the membranes of the brain, and laterally as far as the skull was wounded. Such limitations, however, do not at all satisfy the modern expert surgical operator. He looks deeper to see what lies beneath the membranes and investigates the substances of the brain to determine how much injury it has sustained. He reaches out in his investigations quite beyond the margin of the broken bone, to determine if fragments have not been thrust underneath the margin of the unbroken bones; and to know for a certainty that he is entirely beyond the area of wounding. Not only this, but in almost every case of manifestation of cerebral brain irritation he is found obtruding into this sacred domain with his physical investigations. If he finds fluid within the ventricles producing compression of the substance of the brain, he aspirates it as he would fluids contained in the joint, or pleural cavities. Should he believe this due to some infection, he does not hesitate to inject it with some antiseptic fluid. It is not at all wonderful then, that in these extensive manipulations the sinuses of the brain should occasionally be wounded, either incidentally or accidentally.

I wish to report to this society three cases of wounding of the sinuses. One accidentally during an operation, and two the result of injuries sustained through the fragments of bone of the skull, when it was broken, being driven into it.

Case 1.—In doing craniectomy upon S. L. for chronic concentric hypertrophy of the skull, extending over a large area of its vertex, I found the bones exceedingly hard, almost ivory-like in consistency. The pressure I had to make on the trephine was very great and the progress I made in the operation very slow indeed. I noticed toward the end of my cutting that blood was flowing freely from the groove made by the trephine, and was at once made aware that I had either opened a large vein or the superior longitudinal sinus. As soon as the button was removed I found that the groove through the sinus was more than ordinarily deep, and that I had made a large transverse opening in the sinus through which the blood flowed very freely. I had pressure made over it, and proceeded with the operation until I had completed it. I thought now that it was a fresh wound, clean and healthy in every respect, that if I could suture the margins with fine catgut, bringing them closely together, I might be able to get healing by immediate union, especially as I intended to cover it up with the scalp flap. With a small needle and piece of fine catgut I succeeded very well in suturing the margins and bringing them into apposition, and thus entirely arresting the flow of blood. I had no farther trouble from this wound. The healing of the scalp was perfect, and I had no bad results whatever from the wounded sinus.

Case 2.—David Guyhrie. On operating at the city hospital on a case of chronic depressed fracture of the skull, extending across the superior longitudinal sinus, I found on removing a portion of the depressed bone that the wall of the sinus had either been so entangled in the broken fragments of the bone, or adhered by inflammatory process of the bone, that on attempting its removal a ragged wound was made in the sinus. Encouraged by my former

experience, I proceeded at once, after having completed my operation, to close the wound in the sinus by catgut sutures. This I had little difficulty in doing, as the wound was but small and the sinus at this point not large. The scalp covering was adjusted in the ordinary way, and the wound healed without the slightest interruption. No bad symptoms followed, and my patient made a perfectly satisfactory recovery.

Case 3.—Case No. 3 was a young man, Mal Dortan, who had four months previous fallen quite a distance alighting on the back part of the vertex. He had sustained a rather long transverse fracture of the skull, with a very marked depression of bone. He had no epileptic seizure, but suffered continuously from headache, so as to entirely invalid him. A trephining operation being determined upon for the removal of the depressed bone, I proceeded to do it at the clinic, in the presence of the class of the University Medical College.

After the scalp had been carefully raised and the bone exposed, I remarked to the class witnessing the operation, that there was an extraordinary amount of blood flowing from the bottom of the fissure, and that either a large vein or the superior longitudinal sinus had been wounded. Upon the removal of the bone down to the bottom of the valley of the depression, the blood flowed much more freely, showing very plainly that it came from the sinus.

As soon as the last piece of bone was lifted a large opening was discovered in the sinus—an opening as large as a lead pencil. The blood flowed from the wound in a stream, very much as if it had been poured from a teapot. My former experience gave me no assurance that I would be able to close this wound.

The edges of this wound were undoubtedly healed over. It was simply a great irregular wound in the upper and back part of the superior longitudinal sinus, just before it divides to form the lateral sinuses. I determined, however, to make the attempt to close it, and hoped—perhaps without any very good grounds—that my efforts would be successful. I had a good deal of trouble in drawing the edges together; in fact I very much question whether the edges were brought together at all or not. I did succeed, however, in almost completely arresting the flow of blood, a simple oozing being all that was left. The area of bone removed was quite large and I was fearful of oozing under the flaps. I placed at two or three points capillary drainage. I adjusted the flap over the wounded sinus as well as possible, and hoped to get as good results as I had in the two former cases.

Circumstances over which I had no control prevented my dressing him at the next clinic, and he was dressed by the hospital dresser, who inadvertently pulled out the capillary drainage in removing the dressings, and thinking he had to replace it by something else, put in some rubber drainage tubes that were undoubtedly infected. When I next dressed the wound—one week from the day I operated—I found to my horror purulent fluid issuing from the drainage tubes. I dressed it with all the care I knew how, and cleansed it with all the antiseptic precautions. It was with fear and trembling that I visited the hospital each day for the next two weeks, thinking that each time I should find my patient comatose from the entrance of pus into the sinus. Nature, however, had done more for me than I had given her credit of being able of doing, in having so carefully and completely sealed up this vulnerable point.

Suppuration continued from one of the drainage tubes for almost three weeks, but no bad symptoms resulted from it. The wound in the sinus was safe, having been completely sealed up by the flap, the suppuration never extending to it.

I have been thus careful in reporting the results of these cases, with the purpose of encouraging surgeons in this line of treatment. Believing that the wall of the sinus if kept thoroughly aseptic, and closed without the lining of the membrane of the sinus being wounded by the surgeon, would heal just as a wound will in any other part. Particularly so if it is immediately closed over by clean, healthy tissue. In my judgment, it is preferable to the method so generally recommended of packing, and hoping that it may heal by a clot, the danger of which I think is very great.

RHINITIS IN CHILDREN; ITS VARIETIES, CAUSES AND TREATMENT.

Read before the Illinois State Medical Society, May 15, 1893.

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The forms of rhinitis which affect children are, in the main, subject to the same classification as when affecting adults. Various phases of the disease, however, both in pathology and clinical history, assume in childhood different degrees of importance, by reason of special tissue proclivities which are incidental to early life, and of unusual damage liable to ensue in a child from neglect of the disease during the developmental period. The treatment also requires special adaptation to the comparative helplessness and timidiy of young children.

ACUTE RHINITIS.

Acute rhinitis, colloquially termed "cold in the head," is an acute inflammation of the mucous membrane lining the nasal cavities from the anterior nares to the naso-pharnyx. It is prone to extend to adjoining mucous surfaces and usually embraces the naso-pharnyx, at least to some degree, and thence not infrequently also the middle ear.

Etiology.—Reasoning from analogy, one must regard acute suppurative rhinitis as an infection by pathogenic micro-organisms, but it is a result of "taking cold," which follows certain exposures with such regularity and precision that one must also infer a causal relationship to exist between chilling of the body and rhinitis. The congestion of the nasal vessels occasioned by "taking cold" evidently favors a microbic invasion of the mucous membrane by, in some manner, impairing its powers of resistance.

Instances are not wanting of direct infection of one person by the discharges of another, an accident which is apt to happen among children by the use of handkerchiefs in common. Suppurative rhinitis of

infants is also attributable to direct infection from the vaginal discharges during birth, and to want of cleanliness after birth.

Treatment.—It is much too customary to permit this acute inflammatory disease of a delicate part of the body to progress without efforts to mitigate and abbreviate it. Such a course is fraught with immense possibilities of ultimate damage, chronic catarrh of the nose and accessory organs being thereby established. Many remedies are of real service, but a multiplicity of recommendations is confusing and tends to lessen confidence in any one line of treatment. I will therefore describe simply my own methods of dealing with these cases.

If it is sought to abort the attack of rhinitis, a single average-sized dose of Dover's powder, proportionate to the age of the child, is given at bedtime, also a laxative if needed. The patient is especially well covered in bed, outside night air is excluded and the temperature of the apartment maintained during the night at 60° to 64° F., but no effort is usually made to produce profuse prespiration.

Internally, the following formula will meet the indications:

℞. Tr. aconiti, m.xii.
Tr. belladonnæ, m.xxiv.
Morphinæ sulphatis, gr. ¼.
Potassii bromidi, ʒi.
Spts. menthæ piperitæ, m.xx.
Aquæ g. s. ad. fʒiii.
M. et. Sig.: Adult dose one teaspoonful every hour, to be lessened for children according to age.

The same ingredients could readily be prepared in the form of a capsule, pill, or compressed tablet.

Local treatment is of the utmost importance, and the following mixtures render satisfactory service by atomization;

SPRAY NO. 1.

℞. Cocainæ hydrochloratis, gr. ii.
Sodii boratis, gr. xx.
Sodii bicarbonatis, gr. xx.
Ol. eucalypti, m. i.
Ol. gaultheriæ, m. i.
Thymol, gr. i.
Menthol, gr. ½.
Glycerinæ, fʒ ss.
Aquæ q. s. ad., fʒi.
M. et. Sig.: Dilute, adding one or two teaspoonsful to one ounce of warm water for use as a spray.

SPRAY NO. 2.

℞. Cocainæ hydrochloratis, gr. ii.
Ol. pini canadensis, m. v.
Ol. gaultheriæ, m. ii,
Ol. eucalypti, m. ii.
Thymol, gr. ½.
Menthol, gr. i.
"Vaselin oil," fʒi.
M. et. Sig.: Use with double bulb (Davidson) atomizer, either alone or following the use of spray No. 1.

For young children who are often terrified by spraying, may be substituted a small syringe or an ordinary medicine-dropper used as a syringe, with which to project gently either of these solutions through the nostrils. Spraying or gentle syringing in this manner may be performed twice or three times daily or even every three hours in severe cases. The cocaine can be omitted from either spray formula if there is any objection to its use, without seriously impairing the effectiveness of the remedy. All solutions for nasal use should be somewhat warm.

Of the many inhalations, I will mention only camphorated steam as a domestic remedy of power. It is conveniently used by placing a pint of steaming hot water in a glass fruit jar and adding two fluid drachms of spirit of camphor. A funnel, preferably of glass, is then inverted to cover the mouth of the jar and the rising steam is inhaled through the nostrils as it escapes from the small end of the funnel. So used, especially during the evening for a half-hour, it conduces to a comfortable night's rest and facilitates recovery.

SIMPLE CHRONIC RHINITIS, INCLUDING CHRONIC PURULENT RHINITIS OF CHILDREN.

Recurrent attacks of acute rhinitis establish in children and young people especially, a chronic inflammation of the mucous membrane which is characterized by variable degrees of proliferation of the epithelium, and by muco-purulent secretion which is often profuse. The disease is not accompanied by material enlargement of the turbinated bodies or distension of the erectile tissues, and stenosis is not a prominent symptom which differentiates it from hypertrophic rhinitis.

Etiology.—Bosworth plausibly contends that children are particularly prone to inflammation of the epithelial lining of mucous membranes, and that the epithelial proliferation of muco-lymphoid glands becoming organized without desquamation accounts for enlargement of the tonsils, etc., while an allied inflammation in the nose with rapid desquamation of the epithelium constitutes the most important element in purulent rhinitis. The disease bears no constant relationship to scrofula, tuberculosis or syphilis since it affects children who are otherwise robust quite as frequently as it does the subjects of these dyscrasiæ. Inattention to hygienic matters, leading to frequent attacks of acute rhinitis, and failure to treat the same effectively, are potential factors in the establishment of this form of catarrh.

Symptomatology.—A profuse muco-purulent discharge from both nostrils, swelling and redness of the external nasal appendage and excoriation with incrustation of the anterior nares are the chief manifestations, a too profuse discharge being the sole complaint in the milder cases.

In the course of years, if the purulent type of rhinitis be not arrested, the mucous glands, atrophy, the secretion grows less, but thicker, and tends to accumulate in crusts. In other words, the disease may pass gradually into the atrophic form of rhinitis which is the successor to purulent rhinitis perhaps more frequenlty than it succeeds hypertrophic rhinitis, although commonly credited to the latter disease.

Simple chronic rhinitis, however, does not always assume a purulent type, the chief symptom oftentimes being merely a too profuse mucous discharge. This form of the disease is prone to pass gradually into hypertrophic rhinitis; in fact, it is sometimes difficult to draw a distinct diagnostic line between either the purulent or non-purulent form of simple chronic rhinitis on the one hand, and hypertrophic rhinitis on the other. Indeed, in rarer instances these conditions are seemingly associated.

Treatment.—In the purulent type muco-pus must not be permitted to accumulate and decompose in the sinuosities around the turbinated bodies, thus perpetuating the disease. In not too inveterate cases thorough cleansing by means of an antiseptic, alkaline and mildly astringent spray, used three or

four times daily, with a hand-ball atomizer, is all that is necessary to effect a cure. The following modification of Dobell's solution answers this purpose admirably:

℞. Sodii boratis, gr. xv.
Sodii bicarbonatis, gr. xv.
Ol. eucalypti, m i.
Ol. gaultheriæ, m i.
Thymol, gr. i.
Menthol, gr. ½.
Glycerni, f ℥ss.
Aquæ, q. s. ad. f ℥i.
M. et. Sig.: To be diluted adding two teaspoonsfuls to one ounce of warm water for use as a spray.

If a more active astringent is necessary to check the hypersecretion, sulpho-carbolate of zinc, two to five grains to the ounce, may be used as a spray, following the cleansing solution.

In young children who are terrified by spraying, these solutions, well warmed, can be used by means of a small syringe. When the purulent type of the disease is complicated by the presence of hypertrophy of the turbinated bodies, deformity of the septum, adenoid vegetations, etc., any of which obstructions will impair the drainage, and cause a mucopurulent discharge, surgical treatment appropriate to this special cause or complication is usually indicated. However, the case would not then be regarded, strictly speaking, as one of *simple* chronic rhinitis.

HYPERTROPHIC RHINITIS.

This is a chronic inflammation of the mucous and submucous tissues of the nose, characterized by enlargement, especially of the turbinated bodies, which encroach upon the normal lumen of the nostrils, and cause impairment of nasal respiration and drainage. The disease is thought to be rare with children, especially under ten or twelve years of age, but I am convinced that a mild form or early stage of the affection is very common at all ages.

In children and adolescents persistent enlargements of the turbinated bodies can and do present themselves, in consequence of mere dilatation and engorgement of the vessels of the submucosa, without any considerable degree of cell proliferation, but in addition to this "intumescent form," even somewhat advanced grades of hypertrophic rhinitis are certainly met with in children.

Etiology.—The most prolific source of hypertrophic rhinitis in young children is adenoid vegetations, which, by partial occlusion of the posterior choanæ, interfere with the proper drainage and evaporation of nasal secretion, the irritation of retained and decomposing secretions serving to excite proliferative changes in the nose.

Clinically these conditions are frequently conjoined and it is certain that they sustain some dependence upon each other, for removal of the "adenoids" is often followed by subsidence of the nasal hypertrophies. Recurrent acute rhinitis is another potent factor in the development of hypertrophic rhinitis.

Symptomatology.—Nasal stenosis or obstruction on one or both sides is the most prominent symptom. The secondary results of nasal stenosis, are a nervous restlessness, which is excited in many by the sense of obstruction and pressure in the nose, inability to sleep soundly at night, or intellectually to apply themselves persistently by day, together with headache and reflex pressure symptoms such as hemicrania, asthma and spasm of the glottis. The most frequent of the reflex nasal symptoms in childhood, are asthma in association with bronchitis and spasm of the glottis in association with laryngitis; in fact, so common in children is dependence, at least in part of chronic bronchitis, with asthmatic symptoms upon nasal stenosis and adenoid vegetations that the closest scrutiny and attention should be given to the upper respiratory tract in all such cases.

The term "reflex" is doubtless often misappropriated, yet it has a definite significance, and the pathological reflexes which originate in nasal or naso-pharyngeal irritation and terminate in cough, laryngeal spasm, or asthma, follow much the same pathway as the physiological reflex known as sneezing.

A very annoying symptom and one which may first attract attention is dysphonia; in fact, such children are constantly declared to be tongue-tied, and the lingual frænum cut without benefit, when the real defect in speech lies in occlusion of the nares or naso-pharynx.

Treatment.—When dependent upon adenoid vegetations, the surgical removal of these growths usually results in subsidence of the hypertrophic rhinitis. Resolution will be favored in such cases, however, as well as in the milder forms of the disease, not secondary to naso-pharyngeal adenoid hypertrophy, by the use, twice daily, of an antiseptic alkaline- and mildly astringent spray, or lotion formulated as prescribed for "simple chronic rhinitis." This is especially important as a cleansing measure in cases in which some degree of hypertrophy is conjoined with the suppurative type of rhinitis. Refined petroleum products variously known as "albolene, lanoline, benzoinol," etc., are just now extensively employed in many combinations in all forms of rhinitis, but antiseptic alkaline aqueous solutions are certainly more effective when the parts are to be cleansed of muco-purulent accumulations. Petroleum sprays are, however, often soothing and protective to the parts, especially at times of acute and subacute exacerbations, and may be used in such cases following the aqueous spray twice daily, or used alone with patients who have no retained muco-purulent secretions. "Vaselin oil," being more viscid than the whiter products, and yet sufficiently fluid to be converted into spray by a good double bulb hand atomizer, is best adapted to this use, and may be prescribed in the following combination:

℞. Ol. pini canadenses, m. v.
Ol. gaultheriæ, m. ii.
Ol. eucalypti, m. ii.
Menthol, gr. i.
Thymol, gr. ½.
Vaseline oil, q. s. ad., ℥i.
M. et. Sig.: Use with a double bulb atomizer.

A more astringent spray is occasionally beneficial, although strong astringents are not well borne by the nasal mucous membrane:

℞. Zinci sulpho-carbolatis, gr. v.
Iodi, gr. i.
Potasii iodidi, gr. ii.
Menthol, gr. i.
Ol. gaultheriæ, m. iii.
Glycerini, f ℥ss.
Aquæ q. s. ad., f ℥i.
M. et. Sig.: Use with atomizer.

NOTE.—Vaseline oil or albolene can be substituted for the glycerine and water of this formula.

Persistent use of these remedies together with the surgical removal of adenoid vegetations and enlarged

faucial tonsils, and hygienic guards to prevent frequent "colds" will effect a recovery in the majority of cases of hypertrophic rhinitis of children. A minority, however, which includes especially the older children, will not yield to this treatment and will require reduction of the hypertrophy by means of the electro-cautery in order to overcome the nasal stenosis. One should not hesitate to adopt this method in suitable subjects for the results are very satisfactory.

ATROPHIC RHINITIS.

Also termed cirrhotic rhinitis, dry catarrh, ozœna and fetid rhinitis, is characterized by atrophy and cirrhotic changes in the nasal mucous and submucous tissues, including the turbinated bones, which lead to increased spaciousness of the nostrils; also by atrophy with impairment of function of the mucous glands, by reason of which the muco-purulent secretion becomes inspissated and accumulates in the form of crusts, which in turn, undergo decomposition and occasion fetor.

Etiology.—The commonly accepted theory that atrophic rhinitis is a sequel to hypertrophic rhinitis, a late stage of that disease, is now receiving much adverse criticism. It is true that an *apparent* transition is occasionally observed, but that the previous hypertrophy was the real and essential cause of the subsequent atrophy is exceedingly doubtful. I have observed the two conditions to exist at the same time in the same individual—atrophy in one nostril and hypertrophy in the other, and even atrophy and hypertrophy in different parts of the same nostril; but the only cases in which I have observed distinct hypertrophy to pass definitely and completely into the atrophic condition were those affected with grave constitutional disease, notably tuberculosis and syphilis.

The average life histories of the two affections are dissimilar. At least one form of atrophic rhinitis is common in childhood and the disease rarely originates after thirty-five or forty years of age.

Hypertrophic rhinitis with permanently organized infiltration of a degree sufficiently advanced to pass as alleged, into the atrophic state, does not commonly occur, at least until maturity; hence, this theory fails to afford an adequate explanation of the many cases of atrophic rhinitis which occur in early life. Bosworth has advanced the most rational explanation of the etiology of atrophic rhinitis of early life in designating "suppurative rhinitis of children" as the real cause, a view which harmonizes with the life history of the disease, and which is of especial value from a prophylactic standpoint, since it teaches us the importance of promptly suppressing chronic suppurative rhinitis, viewed as a cause, the ultimate effect of which, atrophic rhinitis, is itself difficult of suppression.

Hereditary predisposition to atrophic rhinitis is often pronounced. For instance, a patient, æt. twenty-two, has developed the disease during the last two years; her mother, for some years deceased, suffered from the disease in a typical form; the patient's child, aged three years, is likewise affected.

Symptomatology.—Crust formation and fetor are the most prominent symptoms of the disease, although other secondary manifestations are numerous. The crusts may accumulate only in thin scales, or in large masses of horny consistency which may even occlude the nostrils at times, being firmly adherent and impacted in the sinuosities of the nares, until by decomposition and softening of the layer adjoining the mucosa they are finally cast loose and expelled in large pieces by blowing, often leaving abraded surfaces behind.

The fetor varies in intensity in different cases, but is rarely entirely absent, and in its severe form is so horribly nauseating and penetrating as to contaminate the atmosphere of an entire room in a few minutes, and to necessitate comparative isolation of the patient. The fetid odor is apparently due solely to decomposition of the incrusting secretion *in situ*, but there is reason to believe that this decomposition may extend to the secretion which is still in process of elaboration in the substance of the glands themselves.

In advanced cases, commonly, the sense or hearing is impaired, the patient's own smell obtunded, the external nose broadened, its alæ thickened, and the physiognomy lacking in acuteness of expression. The disease extends after a time to adjoining surfaces, constituting atrophic naso-pharyngitis and atrophic pharyngitis. The naso-pharynx becomes so incrusted that the fetid masses must be literally pried out with probes and forceps. More rarely, even the larynx and trachea become involved, crusts accumulating in these passages to the point of occasioning dyspnœa.

Diagnosis.—On rhinoscopic examination, both anteriorly and posteriorly, one is impressed by the spaciousness of the nasal cavities and the presence of scales or crusts. The disease is likely to be confounded, especially in childhood, with hereditary syphilis of the nares, which is also accompanied by fetor and incrustation. Unfortunately, by reason of the fetor the term "ozœna" has been applied to both diseases, consequently it is a bad name for either affection, especially since it refers only to the symptom—fetor.

In atrophic rhinitis, there is uniform atrophy and incrustation without deep, destructive ulceration.

In hereditary nasal syphilis the atrophic process, if present at all, is not uniformly distributed, the nostrils being contorted by deep ulceration with subsequent cicatrization of various parts.

Prognosis.—Atrophic rhinitis requires persistent thorough treatment over a period of from four months to two years, in order to effect recovery even in young subjects and in recent cases. Both patient and physician are prone to become discouraged and to abandon treatment, much to the disadvantage of the former. Inveterate cases must continue cleansing measures for years, as part of the toilet, with the same regularity that is given attention to the teeth. In the worst cases the difference between persistent treatment and total inattention, is the difference between the lot of an acceptable member of society and that of a social outcast.

Treatment.—The first essential to successful treatment is absolute and continuous cleanliness of the parts. The crusts must not be allowed to form, much less to undergo decomposition. One of the most efficient means to this end, especially for children, is the nasal douche. I believe it to be justifiable for the sake of efficient treatment of this particular disease to assume the slight risk of inflammation of the ear, possible by this instrument. This risk, with proper use of the instrument, is remote in

comparison with the danger from atrophic rhinitis, ineffectually cleansed. The original instrument of Thudicum was of glass, but the ordinary soft rubber bag gravity douche fitted with a nasal nozzle, answers the purpose still better. It should be suspended from a nail over a convenient basin at such a moderate height that the bottom of the bag is only about three inches above the level of the nose, as the head is held over the basin. The patient must maintain breathing by the mouth well opened, when on applying the nozzle to one nostril the liquid will gravitate gently and slowly into one nasal passage and out through the other, the oral respiration sufficing to close the naso-pharynx by the velum palati. Not force, but thorough maceration, is requisite to detach the crusts, therefore one to two pints of fluid should be gently and slowly used, twice daily as a part of the morning and evening toilet. The liquid employed should be alkaline, to facilitate solution of the crusts, *antiseptic*, to counteract the fetor, and *stimulating*, to encourage regeneration of the atrophied glands. These qualities are provided in the following formula:

R. Sodii bicarbonatis, ʒiii.
Sodii boratis, ʒiii.
Extracti pini canadensis fluidi, fʒi.
Glycerini, fʒiv.
Aquæ q. s. ad. fʒviii.

M. et Sig.: To be diluted according to tolerance, adding one ounce to the pint or quart of warm water for use with the nasal douche.

With older children who can be taught the necessary manipulation, Warner's post-nasal douche should be substituted for the anterior douche of Thudicum on account of greater safety relative to the ear. The same solution in the same proportion can be used with it. One must first draw up a part of the liquid through the instrument into the rubber ball, then insert the curved nozzle through the mouth, behind the velum palati into the naso-pharynx, and squeeze the ball, thus expelling its contents forward through the nasal passages. This procedure should be repeated until half a pint of liquid is thus used, morning and evening. Children who will not tolerate any of these means can have the nostrils syringed conveniently by an ordinary soft rubber tipped ear syringe.

Peroxide of hydrogen has the property, by rapid oxidation, of disintegrating muco-purulent matter, and sprayed into the nostrils it will thus assist materially in loosening the dessicated secretion. It should be used a few minutes preceding the employment of either form of douche, sprayed by a powerful double-bulb atomizer, and of a strength just insufficient to cause smarting. The patient should receive treatment preferably from one to three times weekly in the office, at which time any resisting crusts should be detached by a cotton probang, and more actively stimulating and antiseptic medicaments applied. For the excoriation and incrustation around the anterior nares and over the cartilaginous septum, which is often one of the most annoying features with children, the following ointment thoroughly used each night, being inserted into the nostrils as far as the finger will reach, gives the most satisfactory results:

R. Hydrargyri oxidi flavi, gr. i
"Vaselin," ʒi.

M. et Sig.: For local application.

Sprays of "liquid vaselin" with which antiseptic and stimulating medicaments, such as thymol and menthol may be incorporated, are also serviceable at times, tending to retard crust formation. Cod liver oil and syrup of iodide of iron are seemingly the most useful internal remedies, although neither can be relied upon to the exclusion of local treatment.

NECROLOGY.

Thomas Antisell, M.D.

Appropriate action was taken by the Medical Society of the District of Columbia, and this sketch was ordered to be sent to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. SAMUEL S. ADAMS, M.D., *Recording Sec'y.*

Thomas Antisell, M.D., died in Washington, D. C., June 14, 1993. He was born in Dublin, Ireland, January 16, 1817. He was son of Christopher Antisell of Kings county, Ireland, a distinguished barrister and Queen's council; his ancestry going back to Sir Bertine Entwyssel, who accompanied Henry II to Ireland.

He was educated at Trinity College, Dublin, studied medicine at the Dublin School of Medicine, Peter street, and Irish Apothecaries' Hall. He was a pupil and afterwards assistant to Sir Robert Kane from 1839 to 1843. He graduated at Royal College of Surgeons, London, in November, 1839, and spent a semester with J. B. Pelouze in his laboratory. In 1844 he pursued his chemic studies in Paris and Berlin under the most celebrated chemists of the time, Pelouze, Biot, Dumas and Berzelius. He practiced medicine in Dublin from 1845 until 1848, and was lecturer on chemistry in "Original School of Medicine." He was extra professor to Royal Dublin Society, 1845–1848. He was a member of the Royal College of Surgeons, England, member of the Royal Dublin Society and member of the Geological Society of Dublin. As one of the "Young Ireland Party" he was sentenced to exile and imprisonment, but a friend procuring for him a position as surgeon on an outgoing vessel, he sailed for the friendly shores of America. Landing at New York November 22, 1848, he began the practice of medicine in New York City, which he continued until 1854, when he accepted the invitation to become the geologist of the P. R. R. Survey on the thirty-second parallel, by Lieut. Parke, Topographical Engineer U. S. A. Made a geological reconnoisance of Southern California and Arizona Territory, published in the seventh volume of the United States Reports of Explorations and Surveys, 1856. In 1848 he was professor of chemistry in Berkshire Medical Institution, and in 1854 professor of chemistry at the medical college at Woodstock, Vt., and Pittsfield, Mass.

From 1856 to 1861 he was chemic examiner in the United States Patent office.

During the civil war, 1861 to 1865, he was brigade surgeon, Surgeon of U. S. Volunteers, medical director Twelfth Army Corps, surgeon in charge Harewood Hospital, Washington, D. C., surgeon in charge of sick and wounded officers in Washington, D. C., president of Board of Examiners for Surgeons and Assistant Surgeons of Volunteers, was "brevetted Lieut.-Colonel for faithful and meritorious services during the war." He was mustered out of service in October, 1865.

In 1865 he was offered the position of president of the College of Cairo, Egypt, which he declined. From 1866 to 1871 he was chief chemist to the U. S. Department of Agriculture, and in 1869–70 was professor of chemistry to Maryland Agricultural College. In 1871 he was invited by the

Japanese government to be technologist of a government commission to develop the resources of the northern islands of that empire, returning in 1876. In appreciation of his valuable services to Japan, he was decorated by the Emperor of Japan with the "Order of the Rising Sun of Meijii." While on the ocean *en route* for Japan an invitation came to become president of the College, Lancaster, Pa., which Dr. Antisell appreciated and would have liked to accept, but it came too late, he having already contracted with the Japanese government for five years.

In 1877 he was again appointed chemic examiner in the U. S. Patent Office, which position he held until July, 1890, when, his health failing, he was reduced to a first-class clerkship and finally removed, August 31, 1891, by Secetary Noble.

From 1856 to the present time (1893), excepting an interval of five years in Japan, he has lived in Washington, D. C., where he resided till his death. All his life he has been a medical teacher, his specialty being analytical and technical chemistry. He has long been a member of the Medical Association of the District of Columbia, and of the American Philosophical Society of Washington, D. C., a corresponding member of the Academy of Natural Sciences Philadelphia, and of the Geographical Society, New York, a Fellow of the American Association for the Advancement of Science, also an honorary member of the Medical Society of the District of Columbia.

The University of Georgetown, with the medical department of which he has been connected as professor for more than thirty years, in the capacities of professor of chemistry and toxicology, professor of military surgery, physiology and hygiene, and emeritus professor of chemistry and toxicology, conferred upon him the degree of Doctor of Philosophy.

Dr. Antisell has been interested in and intimately connected with sanitary matters in the District, and has written many papers on kindred subjects.

The sanitary investigation of the National Hotel and the ventilation of the Capitol were public interests that were benefited by his scientific knowledge. He was one of the original founders of the Training School for Nurses, and the first president of that school.

His contributions to medical and scientific literature have been numerous, of which the following are a few: Papers on "Soils of Ireland," Royal Dublin Society, 1840; "On Sanitary Improvement of the City of Dublin," a "Manual of Elementary Geology," Dublin, 1846; "Outlines of Irish Geology," Dublin, 1847; a "Manual of Agricultural Chemistry," Dublin, 1847; "Treatises on the Tea and Coffee Plants," Dublin, 1847; addresses on the "Philosophy of Manufactures," delivered at Castle Garden during the Twenty-second Annual Fair of American Institutes, October, 1849; "Relations of Physical Geography to Agriculture," 1850, in Transactions of American Agricultural Association; "Home Cyclopedia of Arts and Manufactures,' Putnam, New York, 1852; "Applications of Chemical Science to Agriculture," 1859; "Photogenic and Hydro-carbon Oils," Appleton, New York, 1859; "Geological Reconnoisance of Southern California and Arizona," in U. S. Explorations and Surveys, Vol. vii, Washington, D. C. 1856.

Paper on "Constitution and Source of Bile," in the *American Journal of Medical Sciences*, Philadelphia, January 7, 1864; "Report on the Sanitary Condition of Washington," published in the Transactions of the Medical Society of the District of Columbia for 1864.

A paper on the "Epizootic of Horned Cattle," published in the Transactions of the American Agricultural Association for 1861; a Report made by the Committee on Medical Education to the American Medical Association at its meeting in 1865; "Cultivation of Cinchona," Appleton, 1867; "On the Value of the Sewerage of the City of Washington," included in Report of U. S. Agricultural Department, 1869; Introductory and Valedictory Addresses in Medical Colleges at Washington, six in number, from 1854 to 1871; "The Currents of the Pacific Ocean," 1876.

Dr. Antisell was married twice: to Eliza Anne Nowlan, of Dublin, in 1841, and to Marion Stuart Forsyth, of Detroit, Mich., in 1854.

DR. JAMES J. LEVICK, widely known in medical circles died June 25, at his residence, 1200 Arch street, of heart trouble.

Dr. Levick was born in Philadelphia, and at the age of 22 years, in 1847, graduated from the Medical Department of the University of Pennsylvania.

After two years' service as resident physician at the Pennsylvania Hospital, at which he was, later, on the visiting staff, Dr. Levick was appointed to the staff of Will's Eye Hospital, which position he held until recently.

Dr. Levick was also connected with the Magdalene Asylum. He received in 1884 the degree of A. M. from Haverford College, and was a prominent member of the Academy of Natural Sciences.

He was also a member of the County Medical Society, the American Medical Association, the Historical Society and the American Climatological Association. He was quite prominent in the Society of Friends.

Dr. Levick was a prolific writer on medical subjects, and has printed various papers. Among the most important are those on heart disease and spotted fever. A paper on the early Swedish settler, read before the Historical Society, caused much favorable comment.

DR. JOHN C. HALL, Frankford, Pa., died June 8th. Dr. Hall was superintendent of the Friends Asylum for the Insane at Frankford, Pa.

DR. C. BERNARD GALE, Newport, Ohio, died June, 1893. Joined the ASSOCIATION at Detroit in 1892.

DR. SILAS T. TROWBRIDGE, late of Decatur, surgeon of the Eighth Illinois Regiment and United States Consul at Vera Cruz, Mexico, for twelve years, died at Napa, Cal., aged 68 years.

DR. WILLIAM CARSON, one of the most distinguished physicians of Philadelphia, died at 11 o'clock July 9.

Dr. CHARLES S. FRINK, the oldest practicing physician in Elkhart, Ind., died suddenly in his office July 9. During the late war he was a member of Gen. Rosecrans' staff.

DR. FRED DELAMATER MARTIN, a prominent young specialist of Norwalk, O., died July 7, aged 37. He was a student of Sir Morell Mackenzie in London for a season. He was an unusually talented and successful practitioner and surgeon.

THE deaths of the following distinguished members of the medical profession abroad have been announced:—Dr. Peter, Professor of Clinical Medicine in the Paris Faculty of Medicine; Dr. J. Wojtaszek, *privat-docent* in Pharmacognesis and City Sanitary Officer in Cracow, of typhus fever contracted during the discharge of his duties.—Dr. Modrzejewski of Warsaw, who has written on deaf-mutism and a number of other special subjects of various kinds.—Dr. Frederick A. Salzer, Professor of Surgery in the University of Utrecht.—Dr. Delasiauve. formerly physician to the Salpétrière, Paris.

Newspaper Joke.—The following intensely humorous item is going the rounds of the lay press.

Manotrichloracetyledimethylphenylpyrazalon is the chemical name for hypnol.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:
PER ANNUM, IN ADVANCE $5.00
SINGLE COPIES . . . . . 10 CENTS.

Subscriptions may begin at any time and be sent to
THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
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SATURDAY, JULY 15, 1893.

THE NEW ILLINOIS BILL FOR THE COMMITMENT OF THE INSANE.

All who are well informed in such matters will agree that the recent statutes of Illinois governing the commitment of the insane have been inadequate and in some particulars almost barbarous. It is true that this State once had a statute that was fairly humane in its operation, but this was repealed when the law of 1874 was enacted, at the instance of a female paranoiac who alleged that she had been wrongfully detained at the State hospital in Jacksonville. About the only thing arrived at in that law was that every person should be brought into the county court and in the presence of a judge tried by a jury. All other matters were left in lamentable confusion, everything was sacrificed to that fetich, trial by jury for the insane, to the end that it should be impossible for a sane person to be sent to an asylum. As soon as there, he was forgotten by the law and no record even was kept by the court of the final disposition of the case. If discharged recovered by the hospital there was no way of establishing judicially the fact that the person was restored to reason unless they fortunately had property and a conservator had been appointed by the probate court, in that case the application to have the property restored and the conservator discharged would again establish legally the fact of sanity.

For several years the Illinois State Medical Society has endeavored to have these defects remedied, resolutions have been passed, and the legislature urged to take up the question of lunacy laws, but until the last session, when a committee was appointed and several hundred dollars appropriated to pay their expenses at Springfield, practically nothing had been accomplished. Especial credit is due to Drs. A. B. STRONG and D. W. GRAHAM, for the admirable manner in which they conducted the campaign.

It was felt by every one having the interests of the insane at heart, that the clause of the old law requiring a trial by jury might safely be left to the discretion of the court, and in cases where persons were so demented that they did not have sufficient mental capacity to ask for a jury trial, or where they appreciated their unfortunate condition and did not want it, they might safely be committed by certificate of two qualified physicians. This latter clause has always been the stumbling block in the way of the average legislator when lunacy laws were under consideration. In this case an effort was made to destroy the usefulness of this bill by striking out from one of the sections the provision relating to trial by commision. Curiously the section stricken out is the one that safe-guards the commission and distinctly reserves the right of jury trial in case it is demanded. The provision for the appointment of the commission is amply provided for in other sections, not touched by the amendment.

In brief the provisions of the new bill are as follow: A definition of the word insane within the meaning of the act; a provision that no one shall be restrained of his liberty unless they shall have been adjudged insane. Directions for filing petition in county court and providing that where no physician has seen the alleged lunatic that the judge may appoint one to do so at a cost not to exceed five dollars. The filing of the above petition is sufficient to bring the lunatic before the court, unless the affidavit of some credible person is shown stating that the presence of the person in court would be manifestly improper. When no jury is demanded and the circumstances of the case are such that there appears to the judge no necessity for the impaneling of a jury, then the judge shall appoint a commission of two qualified physicians who shall have power to administer oaths and take sworn testimony, and to report to the court in writing their conclusions and recommendations, verified by affidavit. In all cases of trial by jury the jury shall consist of six persons, one of whom must be a qualified physician, and such trial must be in open court, in chambers, or at the home of the person alleged to be insane, at the discretion of the court. A provision is made for answers to interrogatories furnished by the State board of charities. Appeals may be taken to the circuit court from any judgment had under this act. The county court may also appoint a conservator, and sole jurisdiction over the persons of insane persons not charged with crime, is vested in the county court. Every patient confined in an asylum shall have reasonable opportunities for communicating with friends, providing his letters contain nothing of an immoral or personally offensive character. All letters to the trustees, State board of charities, and State or county officials, shall be forwarded unopened. No patient

shall be placed in restraint or seclusion except by order of the physician, and a record shall be kept of all such orders for public inspection. Authority to discharge patients is vested in the trustees of the State institutions and may be delegated to the superintendent. No patient shall be discharged without suitable clothing and sufficient money to defray his expenses home. Every person confined as insane shall be entitled to the writ of habeas corpus, and if the judge shall decide that the person is insane such decision shall be no bar to the issuing of the writ the second time. Whenever notice shall be given to any county court, signed by the superintendent, that a patient committed by the court has been discharged cured, the judge shall enter an order restoring the patient in question to all rights as a citizen, and if a conservator has been appointed he shall be removed. Any person who shall conspire to commit any person unlawfully or who shall detain any person contrary to the provisions of this act, or who shall maltreat any insane person, shall be deemed guilty of a misdemeanor, and upon conviction shall be fined not exceeding one thousand dollars or imprisoned for one year or both. The State commissioners of public charities are intrusted with the enforcement of all laws relating to the insane, the licensing of private houses, regulation of the forms relating to commitment, transfer and custody of the insane, and the visitation of places of detention. In case they institute prosecutions under the act, the attorney general and the State's attorneys in the several counties shall render them all needed assistance. They are also empowered to appoint boards of auxiliary visitors in each county, who shall visit almshouses, jails and houses other than licensed institutions in which the insane may be confined. By written application to the superintendent a person may commit himself to the hospital, but such voluntary patients shall have the right to leave the hospital at any time on giving three days' notice to the superintendent.

The above are the main provisions in what seems to be a most excellent measure, for the protection of the rights of insane persons. Indeed, it is about the first legal recognition that the insane have any rights. It removes the stigma that courts by their forms have attached to insanity, which makes it very like crime for which a person is arrested, charged, tried, and found guilty the same as for a felony.

MEDITERRANEAN FEVER.

There is a fever occurring along the coast and in the islands of the Mediterranean sea that is known as Mediterranean fever, Rock or Gibraltar fever, Neapolitan fever, the country fever of Constantinople, the new fever of Crete, Malta fever, adenotyphoid fever, intermittent typhoid fever, atypical typhoid fever, sudoral fever, etc., that has been considered by some clinicians as typhoid fever, by others as a typho malarial fever, and by still others as a pernicious malarial fever. SURGEON DAVID BRUCE published a paper in the *Practitioner* for September, 1887, in which he stated that the characteristics of the Malta fever are its long duration, the average stay in the hospital being 85.5 days, the continuous high temperature that may be remittent or intermittent in type, the enlarged spleen, the profuse sweating and sudomina, the constipation, the tendency to the development of some bronchitic affection, and the tendency to relapse often accompanied by rheumatic pains, arthritis or orchitis. As a rule the mortality is small. Postmortem examination of these patients showed enlargement and congestion of the spleen and other internal organs, but no appearance of any glandular enlargement or lesion in the intestines.

MR. BRUCE also stated that he had succeeded in obtaining from the spleens of several patients a micrococcus that grew in agar-agar nutrient jelly. He published in the same journal for April, 1888, a second paper in which he reported other cases of Mediterranean fever in which he found this micrococcus, and he also stated that inoculations of a culture of this organism into a monkey produced a fatal disease resembling the fever, while guinea-pigs, rabbits and mice were not susceptible to such inoculations.

SURGEON A. G. P. GIPPS, R.N., published a paper in the Transactions of the Epidemiological Society of London (Vol. IX, 1891), in which he stated that he had found this microörganism in the spleens of two men that had died of this fever. This author considers the fever endemic in Malta, stating that in cruising elsewhere in the Mediterranean he had not seen a similar type.

SURGEON LOUIS HUGHES, A.M.D., published a paper in the *Lancet* for December 3, 1892, in which he stated that he obtained a special microörganism resembling that described by SURGEON BRUCE, from the spleens of five men that died of this fever. In two cases he succeeded in demonstrating its presence in fresh splenic substance, and he successfully inoculated two monkeys with the micrococcus. He made the important statement that he met with no other microörganism in these patients. He concludes from statistics and records of the last seventy years, from the distribution, and more especially from a comparison of the dates of admission of cases of this fever with the amount of rainfall, that its presence in Malta and Gibraltar is connected with human excrement. That the poison of this fever when infecting the human body is aerial in nature and arises from fæcal and organic matter, in porous

soils, when these are undergoing a process of drying.

SURGEON BRUCE has published another paper in the *Annales de l'Institut Pasteur* for April, 1893, in which he calls the microörganism the *micrococcus militensis*. It is a round or slightly oval coccus, three μ in diameter, that grows slowly; seven days at a temperature of 25° C., or three days and a half at a temperature of 37° C., being necessary for the colonies to become visible to the eye, on a one and one-half per cent. peptone agar jelly. The colonies first appear as minute, transparent, colorless drops on the surface, subsequently becoming a transparent amber color, increasing slowly in size and eventually becoming opaque; by reflected light the colonies are milk white. Plate cultures could not be made on account of the very slow growth of the coccus at the temperature at which the gelatine plate remains solid. There was no growth on potatoes. As this microörganism when inoculated in monkeys has produced a disease resembling Malta fever, the author considers that he has discovered the specific organism of Mediterranean fever; but on account of the difficulty of cultivating the organism he is not prepared to state in what way it obtains access to the human organism.

While the course of this fever is not influenced by the administration of quinine, and the authors above quoted claim that paludal poisoning does not exist in Malta, it would have been well to state that examinations failed to show the presence of the *hæmatozoa malariæ*. They definitely state that EBERTH'S bacillus was not present.

SURGEON A. PERRY took exception to SURGEON BRUCE'S statement regarding the identity of Malta fever with the rock fever of Gibraltar. He stated in the *British Medical Journal* for June 8, 1889, that while the symptoms of Malta fever corresponded with those of Gibraltar fever, yet in almost one hundred necropsies he never failed to find in each case the typical lesions of the ileum characteristic of typhoid fever.

It would seem impossible that three observers should make the same error in their investigations, and SURGEON BRUCE'S demonstration of a specific microörganism for Malta fever, shows that Mediterranean fever may be a comprehensive term that includes several distinct fevers.

COMPENSATION OF PHYSICIANS SUMMONED BY STATE OFFICERS.

It is an important question for physicians liable to be summoned as experts by State officers to know what rights they have with regard to fees, and especially whether the action of a particular officer or board in fixing their compensation, when so provided for by law, is final and conclusive, or not. Under a former Iowa statute, providing that the coroner might, when he deemed it advisable, summon one or more physicians at an inquest, and that he should fix the compensation for such services, it was held (in Cushman vs. Washington Co., 45 Iowa, 256) that the coroner, or the justice acting in his absence, was the officer or tribunal exclusively charged with the duty of fixing the compensation in question. For refusal to act on the claim made, he might be compelled to do so by mandamus. For allowing an insufficient compensation, as no appeal was allowed, it was not clear what, if any, remedy was provided. The petition in that case showed that the justice refused to allow a claim for $50, but did allow $5 for witness fees and mileage for attending the investigation. This allowance was in excess of ordinary witness fees, and having been made, and the same being in the nature of an adjudication still in force, the physician could not maintain an original action against the county for his compensation. In Sanford vs. Lee Co., 49 Iowa, 148, the coroner had certified the amount charged as reasonable, and recommended the same to be allowed. The board of supervisors allowed only a portion of the amount; but the supreme court held that the recommendation of the coroner amounted to an allowance or approval of the amount charged; that it became a liquidated demand, and the physician was not bound to present it to the board before bringing an action; and that the county was bound, in the absence of fraud, to pay the amount allowed by the coroner. These cases clearly hold that under such a law as the foregoing, the coroner, or justice acting as such, could alone determine what was a reasonable compensation, and that such determination was, in the absence of fraud, conclusive. Under the amended statute of Iowa, which vests that same power in tbe county board of supervisors, their action must, for the same reasons, be held to be conclusive in the absence of fraud, was the decision of the supreme court in Moser vs. Boone County, just rendered. The force of the former decisions was conceded by Moser's counsel, but it was argued that the board might, through ignorance of the reasonable value of the services, or arbitrarily, refuse to allow a reasonable amount, and, no appeal being allowed, he was entitled to his action in court to determine what was a reasonable amount. The court, however, said that it might not be presumed that the board would act arbitrarily, or without due inquiry. In this, as in many other instances, the law does not fix the amount of compensation, because what would be reasonable in one case might not be in others. When it can not be foreknown what will be a reasonable compensation, the law vests some person, board or tribunal with power to determine that matter. The Iowa statute contains many such provisions, of which was mentioned one authorizing the court to fix the compensation of witnesses called

as experts. It would hardly be contended that he could maintain an action to recover more than the court allowed him, though he was not permitted to have a jury to determine the amount, and the court should ignorantly or arbitrarily allow an inefficient compensation. Such a claim is like any other item of costs incident to legal proceedings, and when the amount is fixed by statute, or by the person, board or tribunal authorized to fix it, it is conclusive.

THE CROOK OF THE CYCLE.

The wide diffusion of the bicycle as a means of locomotion, and as well an agent of pleasant pastime, has introduced into orthopedic surgery a new factor in the production of spinal curvature. When the wheel came into use, the handles were long and the rider sat upright. The followers of FATHER JAHN encouraged it, and well informed physicians saw in it a new instrument of physical culture.

The desire for increased speed and record breaking lessened the diameter of the wheel and shortened the handles, so that now you may see on any fine day whole troops of cyclists spinning along with their backs arched over the lever, and as the victim must see where he is going, he raises his chin, and the back of the head approaches the shoulder blades. Thus a double antero-posterior curvature has its foundation laid; constant humping the back could do no less.

It is not intended to convey the idea that cycling should be abolished; on the contrary, it should be encouraged, but cycles should be so constructed that the rider may sit upright like a man, and not double up like a hunchback or professional contortionist. In the latest patterns of bicycles we see wherein true scientific physical culture has been made to give way to the demands of the professionals. The amateur should be encouraged, for he rides for health and pleasure; while the professional rides for the money he can win by it. It was professionalism that ruined the Greek gymnasia, and professionalism has now converted a healthful and innocent amusement into a dangerous diversion.

DOMESTIC CORRESPONDENCE.

Medical Colleges and their Graduates.

To the Editor:—In your issue of July 1, J. J. Mulheron, M. D., in an article favoring the divorce of the medical licensing from the teaching power, gives copious extracts "from papers submitted by students who were graduated from a so-called medical college in good standing in the Association of American Medical Colleges, and whose announcement would lead you to believe that it is devoted to the cause of the higher medical education." It is painfully humiliating to know that any one is legally permitted to practice medicine who is the subject of such an appalling degree of ignorance as these quotations disclose. It should bring blushes to the lowest member of a class in an institution for the feeble minded. The illustrations are conclusive against the propriety of admitting to practice any physician on a college diploma alone, without the added safeguard to the public of a re-examination by a competent board whose sole duty shall be to examine candidates for practice and confer license for the same, but not to teach. I think, however, that Dr. Mulheron deals unjustly with the Association of American Medical Colleges in not disclosing to the public the name of the college alluded to. This would enable medical students to know what schools to avoid and would enable the College Association to take appropriate action. We have medical schools enough to educate as many physicians as are needed to fill the requirements of society, that are honestly conducted and doing worthy work. These are trying to improve their methods and enlarge their means of imparting instruction. By so doing they are increasing the power for good of the profession and consequently elevating its rank. The good name of these should not be smirched, and their character and influence impaired by the acts of others whose conduct only merits professional condemnation.

EPHRAIM INGALS, M.D.

34 Throop St., Chicago.

A Candidate's Answer to the Minnesota Board of Examiners.

Question.—What conditions must be proved to have existed in order to prove the illigitimacy of a *child* born in wedlock?

Answer.—She must have been married nine months prior to birth of child. If born at the sixth or seventh month and live, and the likeness as to father or mother of said child. Another proof is that the husband is not capable of reproduction, *or the mother is not capable of reproduction.*

Waterborne Cholera.

New York, July 3, 1893.

To the Editor:—The interested perusal of Dr. Ernest Hart's admirable paper which covers so much ground, prompts me to add a few words from Japan.

The Hon. S. K. Takahash, late Consul General of Japan for the United States in 1886 said: "When we have cholera in Tokio, and our people die by the thousands, I notice that none in the Chinese quarter have cholera and that the Chinese *all drink boiled water*, to which this immunity is attributed." This strong, terse, positive and direct testimony it seems to me goes to sustain the positions of the distinguished gentlemen who has favored us so kindly with his extensive and timely observation.

Respectfully yours, EPHRAIM CUTTER.

As Others See Us.

The following correspondence which appears in the *British Medical Journal* for July 1, gives Mr. Hart's views on our Association.

MEDICAL NOTES FROM AMERICA.

BY ERNEST HART.

(From the British Medical Journal.)

The American Medical Association.—The Annual Meeting at Milwaukee.—The Constitution of the American Medical Association.—Suggestions for its Amendment—The City of Milwaukee.—Address on Epidemic Cholera.—The British Medical Journal.—The American Medical Editors' Association.—The British and the American Medical Association.

The Milwaukee meeting of the American Medical Association was a very interesting, well-ordered, and lively

meeting; the attendance was over a thousand, and from every part of the States. New York, which is heretical on the question of consultations with homœopaths, still holds aloof, but the Association is strong enough in the support of the most active-minded professional men in the States to dispense easily with the adhesion of any particular section. In their strong upholding of the *Code of Medical Ethics* as the test of membership, the Association has taken up a firm and unassailable position. Since it has acted on the advice which I tendered some ten or twelve years ago, when consulted by Drs. Sayre, Post, Pack, and others on the subject of the best means of promoting the growth of the Association, the membership has more than doubled, and it is now five thousand. The weak point which I laid my finger on was the evanescent character of the membership, which then depended upon annual delegation from the respective State Societies, which are the constituent bodies, corresponding in that respect, but differing in others, from our Branches. There are still, however, some other defects of organization, which I think could easily be remedied, but which hinder the growth of the American Medical Association. On some of these I have been in consultation with members of the executive, and have been asked to renew them in writing; they were meantime received with approval. The system of election of the governing body is capricious, and does not provide for stable and complete representation, but leaves room for much canvassing and wire-pulling, and by its elaborate incoherence raises opportunities for side issues and local contests quite irrelevent to the true objects of the Association. Some of the principles which at present govern the selection of matter for the JOURNAL and the conduct of its editorial department are incompatible with the high scientific, professional, and literary attractions which it ought and might easily be made to present. All this might be altered without additional expense for the moment, and the JOURNAL be made to serve the best interests of the Association and the profession, and to add largely to its resources, which could then be available for making its pages yet more attractive, so that it should—like the *British Medical Journal*—be the chief recruiting agent for the Association. This position, it is acknowledged on all hands, it does not at present occupy, faithfully and ably as it has been edited by Dr. Culbertson and his distinguished predecessors, among whom Dr. N. S. Davis, the founder of the Association, holds an honored place.

My suggestions bear chiefly on the transference of the power of election of the governing body from the "fortuitous concurrence of atoms"—as it has been described in our columns by a correspondent—called a "general meeting" to the county societies, who are the constituent bodies and who should therefore be the elective power. From these representatives, should be constituted the subcommittees for detailed work, who should act under and be governed by its authority. There are at present more than one separate controlling committee of "trustees," of "judicial action," of "nomination," etc., who act independently of each other, and are constituted hurriedly and by caucus influence at the general meeting—a system which might well injure any society, and which has more than once provoked deplorable and painfully michievous schisms. It speaks highly for the inherent and unquenchable vitality of the principle of the Association—"broad based upon the people's will"—and of the vigorous love of the profession and the Association which actuates the most respected member, that the Association has ridden successfully through all such storms. It survives and develops, but with maimed vitality throughout the year, and without that powerful influence on public affairs and professional progress which it might derive from better constituted committees of government, and of public and parliamentary administration, and from a more attractive and effective voice and tongue in its JOURNAL. In saying this I speak of new things, and with none but the most appreciative and respectful spirit. The meeting was large and much of the work was first-rate.

Milwaukee is a city of lawns, gardens, and lake, beautifully situated on a bay of Lake Michigan, and with abundant open spaces, well-preserved for civic ornament and health. Within the memory of the present generation it was the haunt of the Red Indian; it has now a quarter of a million of inhabitants, with fine hotels—Pfister's Hotel, which was the headquarters of the Association, is one of the best in the world—public buildings and business palaces, electric lighting throughout the town, and electric tramways. It is the headquarters of lager beer brewers, and the wealthy citizens aided the profession to make the meeting one of generous and continuous hospitality.

In accordance with the invitation of the Association received in Europe, I delivered an address on the Prevention and Proximate Extinction of Epidemic Cholera in Europe—mainly by the purification of the water supply and strict procedure to ensure the purity of drinking water. The address, which was based upon an analysis of all European epidemics of the last thirty years, was received, as will be seen from the published reports, with great favor. It was ordered to be printed and sent, with the endorsement of the Association as to the importance of its suggestions, to the Executives of all the States, and to the State Boards of Health. That is a compliment which I value even more highly than the kindly enthusiasm and applause which greeted its delivery. At the close of the meeting I was presented by the reception committee with a gold badge enameled with the initials of the American Medical Association and the year of meeting—a souvenir to which I shall attach a permanent value, and which will recall many pleasant incidents of the meeting, some of them too personally complimentary to relate.

It was particularly gratifying to find the *Journal* held in such high esteem and so extensively read. It was constantly, and indeed without exception, referred to as the chief medical journal of the world, and its usefulness to the practitioner as a helper in his scientific knowledge and daily work was referred to by one medical editor after another at the medical editors' banquet, and by scores of medical colleagues who introduced themselves, or were introduced to me, for the purpose of thanking the British Medical Association for its *Journal*. If our laws admitted of it, we could have some thousands more of members or associates among our English speaking brethren on the American continent, while limiting ourselves to members of State medical societies legally constituted and of good ethical standing.

The banquet of the Medical Editors' Association was a most lively and original affair. In so vast a continent, where capitals are often situated a thousand or two or three thousand miles distant, and with a population of more than sixty millions, it is natural that the astonishing literary activity of the nation should find a corresponding representation in the abundance of journals of all kinds. But I was hardly prepared to be the guest of 100 medical editorial colleagues—all of regular standing—with 300 more in reserve. I addressed them on Medical Journalism, in words of which I send a report—disfigured, however, by a great number of misprints and errors due to my "English brogue" and intonation worrying the reporters. I have only had time and patience to correct some of them, others I must leave to the indulgence of any readers of whatever text or part of the text may be published. It will be gathered from reports in the various medical papers what was the impression produced. It was applauded enthusiastically, and I was assured in all the complimentary speeches that followed, and by innumerable eulogists during the subsequent days, that it will not be without permanent usefulness. Of course I had nothing new to say, but even the scattered and desultory thoughts of however humble an orator gather some force from a lifetime of experience and from the disinterested desire of a stranger to be useful in the utterance of its lessons to himself.

Altogether, then, my visit to the Milwaukee meeting has, I hope, been useful as it has certainly been most pleasant, renewing and strengthening the bonds of mutual good will and esteem between the American and British Medical Associations, and promising to promote good understanding and fellowsEip with our English speaking brethren in the United States. To me personally it has been a week of hard but happy work, and of much social satisfaction. I am loaded with friendly and pressing invitations to other cities, among them Boston, Philadelphia, Detroit, Cincinnati, Danbury, St. Louis, Louisville, etc., and could easily spend here an active and happy six months in hospitable hands; but, as I must be home early in July to continue editorial and Parliamentary work—meantime in such excellent and able hands—I shall be unable to fulfil on this occasion more than a tithe of these proposed hospitable engagements, but shall hope to return later on.

ASSOCIATION NEWS.

The meeting of the AMERICAN MEDICAL ASSOCIATION here next year will be the second visit of the Society to this coast. The first meeting was in 1870, and was a sad failure. It found the medical fraternity of California cut up into small cliques—that curse of our profession. Then California was thoroughly provincial; the connection with the east by rail had just been established. The medical men were from all parts of the world. The California medical societies had as yet made very little progress in uniting them socially; every fellow was for himself, or at least every little clique was for itself. We hope and believe that the ASSOCIATION will receive a most hearty welcome at the hands of a united profession, not only of San Francisco, but of the whole coast. We must assume the virtue of unity, if we have it not. The ASSOCIATION is accustomed to be handsomely entertained by the profession and citizens, and if they do not receive a California welcome from our citizens the fault will be with the medical profession, as it was before. Let us, one and all, resolve to make the meeting of the AMERICAN MEDICAL ASSOCIATION here next year worthy of California and the grandest event in the history of that Society. The selection of Dr. R. H. Plummer for chairman of the committee of arrangements is a fortunate one. It requires just such experience, untiring energy and perseverance as our friend Dr. Plummer possesses, to make a grand success of such an occasion.—*Pacific Medical Journal.*

The London Lancet of July 1, contains an extended notice of the Milwaukee meeting and thus concludes:

We wish all success to the Association. It has difficulties to meet in the vast area of its territory and in the consequent varied conditions of life and practice. But it should be supported by the profession, and, as the Mayor of Milwaukee suggested, should be welcomed by all communities as representing a calling indispensable to civilization.

SOCIETY NEWS.

American Dental Association.—The thirty-third annual session of the American Dental Association will be held in Chicago, commencing Saturday, August 12, 1893, at 10 o'clock, A. M. GEO. H. CUSHING, *Rec. Secretary.*

The Association of Military Surgeons of the National Guard of the United States will hold its annual meeting at Chicago, August 8, 9 and 10, 1893, under the presidency of Dr. N. Senn.

American Electro-Therapeutic Association.—The third annual meeting of the American Electro-Therapeutic Association will be held in Chicago, September 12, 13 and 14, at Appollo Hall, Central Music Hall block.

Members of the medical profession interested in electro-therapeutics are cordially invited to attend.

AUGUSTIN H. GOELET, M.D., *Presideat.*
MARGARET A. CLEAVES, M.D., *Secretary.*

National Association of Dental Faculties.—The annual meeting will be held in the house of the Columbian Dental Club, Chicago, No. 300 Michigan Avenue, beginning on Thursday, August 10, at ten o'clock A. M., and continue probably through that and the succeeding day. It is important that all matters of business to come before that meeting be properly prepared beforehand, so that business can go promptly forward. It is to be hoped that all persons interested will give special attention to this request, and that every member be promptly present at the beginning of the meeting, as only the two days will be available for the work. J. Taft, Frank Abbott, A. O. Hunt, Executive Committee.

The Mitchell District Medical Society held its twenty-third annual meeting at West Baden Springs, Indiana, July 12-14. President, Dr. Dudley S. Reynolds, Louisville; secretary, Dr. G. W. Burton, Mitchell, Ind.

Notice to Intending Contributors to the Proceedings of the Pan-American Medical Congress.—The regulation of the congress providing that abstracts of papers shall be in the hands of the secretary-general on or before July 10, was framed to give the Literary Bureau ample time in which to make the necessary translations, and publish the four editions of the book before the assembling of the congress. The request that abstracts be sent in even before the date indicated has been so generally complied with, and the work is so far advanced, that the Literary Bureau finds itself in position to accept abstracts during the remainder of July. To insure careful translation and publication, however, they should be sent in at the earliest possible date.

It is suggested that abstracts be made as full as possible within the 600-word limit.

CHAS. A. L. REED, *Sec'y General.*
311 Elm St., Cincinnati, July 10, 1893.

Congress of Education.—A world's Congress of Education will be held in Chicago, July 25-28, 1893, under charge of the National Educational Association, United States of America.

COMMITTEE.

In General Charge.—William T. Harris, Commissioner of Education, U. S.

DEPARTMENTS.

Higher Education.—Prof. Nicholas Murray Butler, Columbia College, New York city.

Secondary Education.—Principal Ray Greene Huling, New Bedford, Mass.

Elementary Education.—Inspector James L. Hughes, Toronto, Ontario.

Kindergarten Instruction.—Mrs. W. N. Hailman, LaPorte, Ind.

School Supervision.—Supt. W. H. Maxwell, Brooklyn, N. Y.

Professional Training of Teachers.—Principal E. O. Lyte, Millersburg, Pa.

Instruction in Art.—Pres. James McAllister, Drexel Institute, Philadelphia.

Instruction in Vocal Music.—Director N. Coe Stewart, Cleveland, O.

Technological Instruction.—Prof. Henry Morton, Stevens Institute, Hoboken, N. J.

Industrial and Manual Instruction.—Dr. Andrew J. Rickoff, New York city.

Business Education.—Pres. R. C. Spencer, Milwaukee, Wis.

Physical Education.—Prof. D. A. Sargent, Harvard University, Cambridge, Mass.

Rational Psychology in Education.—Pres. J. G. Schurman, Cornell University, Ithaca, N. Y.

Experimental Psychology in Education.—Prof. George T. Ladd, Yale University, New Haven, Conn.

Educational Publications.—Mr. C. W. Bardeen, Syracuse, N. Y.

All the meetings to be held in the Memorial Art Palace, Michigan Avenue, foot of Adams street, Chicago.

Among the interesting papers on the program we notice the following:

Address by General Francis A. Walker, President of the Department.

Thesis: "How far do the technological schools, as they are at present organized, accomplish the training of men for the scientific professions, and how far and for what reasons do they fail to accomplish their primary purpose?" Discussion.

Thesis: "Should an antecedent liberal education be required of students in Law, Medicine and Theology?

Thesis: "The early history and organization of the Sheffield Scientific School at New Haven. Discussion.

Thesis: "The educational value of laboratory work in exact measurement." Discussion.

Thesis: "The educational value of the laboratory study of electricity." Discussion.

FOREIGN DELEGATES TO THE CONGRESS.

Delegates from the following named countries have accepted the invitation and expressed their intention of being present at the congress:

England and Wales, Scotland, Ireland, Ontario, Quebec, Nova Scotia, New Brunswick, British Columbia, Manitoba, Jamaica, New South Wales, Victoria, New Zealand, Sandwich Islands, France, Prussia, Saxony, Würtemburg, Saxe-Weimer-Eisenach, Duchy of Hesse, Mecklenburg-Schwerin, Austria-Hungary, Switzerland, Belgium, Netherlands, Spain, Portugal, Mexico, Guatemala, Brazil, Argentine Republic, Uruguay, Ecuador, Cuba, Italy, Sweden, Norway, Russia, China, Japan, India, and Algiers.

SELECTIONS.

Medico-Legal Institute.—The *Journal de Medicine* says that the Municipal Council of Paris have voted to establish a Medico-Legal Institute near the Morgue, with which it will communicate by means of a tunnel, and by a small tramway cadavers will be carried to and from the morgue. The institution comprises a laboratory for toxicological examinations, room for students, a library, a museum and an amphitheatre, (that at the morgue at present will only accommodate a few students) a special room will also be provided for families of deceased persons, and a room for magistrates during "confrontations."

Diuretin in Diseases of the Heart and Kidney.—*Pawinski* has published a memoir on salicylate of sodium and theobromin (*diuretin*). It is incontestable that this substance is endowed with diuretic properties. The maximum diuresis was attained four or five days after beginning treatment.

Diuretin often provokes more or less excitement of the nervous system and the brain; the author has observed following its use buzzing in the ears, drowsiness, or insomnia. He remarks that these secondary effects are less pronounced shortly after the administration of caffein.

As a general rule, diuretin is more efficacious in affections of the heart muscle, than in valvular disease, or of the orifices; and in nephritis. In the latter case favorable results are still more probable when the œdema is dependent upon defective cardiac energy. Interstitial nephritis is benefited by diuretin, but it is powerless in cases of ascites following hepatic cirrhosis, or epiplooic carcinoma, or in pleuritic exudates.

Pawinski prescribed diuretin in doses of three to five grams a day. When diuretin has been given in any case for six days without increase of diuresis he advises that recourse be had to digitalis or caffein. He prefers to give diuretin in solution; when given in powder one part of theobromin is precipitated on account of its combination with the carbonic acid of the air and becoming insoluble. In the choice between caffein or diuretin, one is guided by the rule that caffein is indicated in cases of adynamia, while diuretin is indicated in cases of erethism (irritability).—*Journal de Medicine*, Paris, June 24.

Distinct Species of Tricophyton in Human Ringworm.—An interesting communication on this subject has been made by M. Sabouraud. He has found that so far, with scarcely any exceptions, the parasite of ringworm may be one or other of two kinds In about 65 per cent. the hairs from the head of an affected child, when examined after immersion in liq. potassæ of a strength of 40 per cent., will, so far as diseased, be found to be filled with very fine spores hardly 3 μ in diameter. These are quite in juxtaposition, arranged irregularly, and without discoverable mycelium. They even transgress the covering of the hair so as to furnish it with a sort of external sheath. The patch of ringworm itself presents special characters; it is round or oblong, is not more than two inches in diameter, often less; its surface rises a little above that of the skin around, the derma is thickened and infiltrated. The affected hair is fine, as a rule, and as if atrophied; its fracture is longish. He has named this parasite *Tricophyton microsporon*. In the second variety, which forms about 35 per cent. of the cases, there are large spores lying in a visible mycelium, arranged in distinct lines in the mycelial branches. These branches are all included in the hairs, and do not form an enveloping sheath to them. The chief patch is rather large than small, irregular, and there are at its circumference tufts of healthy hairs encroaching on the diseased. The patch itself is very bald, since the hairs break off very short. They are rather swollen than atrophied, often no more than a black point at the follicular orifice. Formulated shortly, if the hairs are thick and their fracture a short one, the spores are large, from 7–8 μ in diameter; if the hairs are fine and their fracture long, the spores are small, and have a diameter of 3 μ The variety with large spores he has named *Tricophyno macrosperon*. There is a close relationship between the obstinacy of the ringworm and the T. microsporon; in twenty cases the macrosporon was only found once, but it alone has been met with in tinea barbæ and in ringworm of non-hairy parts. According to Sabouraud's observations, if the macrosporon be found in the hairs of an affected child, the case may be pronounced curable in three to four months, not so if the microsporon be encountered; such cases are the intractable ones. Some exceptional cases were seen with parasites not completely conforming to the characters described; such were apparently instances of infection from animals.—*Annales de Dermatologie et de Syphiligraphie.*

BOOK REVIEWS.

Cholera: Its Causes, Symptoms, Pathology and Treatment. By ROBERTS BARTHOLOW, M.D., LL.D., emeritus professor of materia medica, general therapeutics and hygiene in the Jefferson Medical College of Philadelphia. In one 12mo. volume of 127 pages, with nine engravings. Cloth, $1.25 Philadelphia: Lea Brothers & Co., 1893.

Dr. Bartholow has signalized his restoration to health by the production of a little book on cholera, at once authoritative, and complete in its detail. The time has gone by when a book is judged by its bulk. What is wanted is a clear and simple statement of the existing facts as they are known. The study of bacteriology, and the immortal discovery of Koch, have relegated the older books to the top shelves in the library, where they are scarcely looked into except by some bibliophile or curious searcher after the obsolete. No single topic in general medicine exceeds cholera in the number of titles of books and articles devoted to its discussion, and Dr. Bartholow has shown how all that is absolutely necessary for the practitioner to know about it may be compressed into a few pages. Nearly one-half the book is given to the treatment.

Electricity in Diseases of Women, and Obstetrics. By FRANKLIN A. MARTIN, M.D. Chicago: The W. T. Keener Co., 1893. Second edition. Price, $2. Cloth, pp. 278.

A little more than a year has elapsed since the first edition of this book made its appearance, a fact which must be gratifying to the author. Dr. Martin is scarcely as enthusi-

astic as formerly in regard to cures of myo-fibromata by the Apostoli method as modified by himself. At the International Medical Congress of Washington he asserted that the method was free from danger; painless; that it invariably checked hemorrhage; rapidly reduced the size of the tumors; stopped neuralgic pains, and by exact dosage of the electricity constituted a system of treatment. He now says: "We have discovered by developing it that it will not cure all cases of fibroid tumors of the uterus; that there is still room for the scalpel. About 75 per cent. of all fibroid tumors of the uterus, however, because of electricity, should never be touched with the knife." Dr. Martin emphasizes his previously expressed views that tumors of a cystic nature are not suitable cases for electrical treatment. Four new chapters have been added to the first edition, which give it a wider scope than the title of the book would seem to indicate. The work gives the improved technique of electro-therapeutics very thoroughly, and is an improvement on its predecessor. There are some typographical errors, however, such as "endocervicetus," on page 189, but the book is printed on excellent paper, and the illustrations are fairly good.

MISCELLANY.

The Illinois Board of Health.—The Illinois State Board of Health at its meeting held in Chicago, July 5, elected Dr. Wm. E. Quine, of Chicago, as President, and Dr. Scott of Evanston as Secretary.

A Gas Gun.—The Giffard gun, which projects balls by gas instead of powder, was tested at Nottingham recently. The propelling agent is liquefied carbonic acid gas. The firing of the gun produces no smoke and makes little noise. Bullets fired through one inch board were flattened on the iron backing of the target.—*N. Y. Sun.*

Change of Address.—Frank Parsons Norbury, M.D., removed to Hoffman Building, Jacksonville, Ill.

The Board of Health of Philadelphia has requested the physicians of that city not to place on any certificate "*Heart Failure*" as the cause of death, but the disease of which the patient was suffering prior to the heart failure. This term has never been placed on the list of diseases adopted by the board, it being looked upon as a result of some other illness of which the patient was suffering. Furthermore, it furnishes an opportunity to conceal contagious diseases, and thus permits the ignoring of the rules of this board by the family and undertaker, either innocently or designedly. Hereafter a burial permit will not be issued on the certificate of death of "*Heart Failure*," when unaccompanied with the disease from which the heart failure occurred.—*College and Clinic Record*, June, 1893.

Disinfection by Electricity.—The trial of a new electrical disinfection apparatus was made by the New York city authorities at Brewster's, New York, July 6. The dispatches of the trial, possibly somewhat colored by the sender, state "at the close of the experiments Commissioner of Public Works Daly said:

I regard the electrical disinfectant of Prof. Woolf as one of the most beneficial discoveries of the age. I am entirely satisfied with the result of the experiments.

Health Commissioner Dr. Edson said:

I have no doubt whatever that this is the cheapest and most effective means of disinfecting that has been devised. We have in this disinfectant, in my opinion, an agent combining powerful disinfecting and deodorizing properties which can be produced at a low cost and can be made in any quantity. It is a disinfectant that, in consequence of its cheapness and non-poisonous quality, can be used so freely and unreservedly as to make its discovery one of the most important, from a sanitary standpoint, that has ever been made.

With apparatus costing $5,000, which is run at a cost of $4 a day, Prof. Woolf stated that 4,000 gallons of the disinfectant were produced every twenty-four hours. The disinfecting fluid is conveyed by a pipe into the sewer, and it is claimed that it will kill the germs of all contagious diseases, including those of cholera, diphtheria, scarlet fever, measles, typhoid and typhus fever. The party subsequently witnessed experiments in disinfecting putrid meat and other matter. In less than one minute a piece of putrid meat subjected to immersion in the disinfecting fluid was restored to a healthy color and the offensive odor was entirely destroyed."

This dispatch manifestly exaggerates the facts, but there is enough to warrant further inquiry.

A Busy Doctor.—Dr. Liddell's morning levees were crowded beyond description. It was his pride and boast that he could feel his patient's pulse, look at his tongue, sound him with stethoscope, write his prescription and pocket his fee in a space of time varying from two to five minutes.

One day an army man was shown into the consulting room and underwent what might be termed the instantaneous process. When it was completed the patient shook hands with the doctor and said:

"I am especially glad to meet you, as I have often heard my father, Col. Forester, speak of his old friend Dr. Liddell."

"What!" exclaimed the doctor, "are you Dick Forester's son?"

"I am, sir."

"My dear fellow!" exclaimed the doctor, "fling that prescription into the fire, will you, please, and sit down and tell me what is the matter with you?"—*Waverly Magazine.*

The Typhoid Epidemic at Ironwood, Michigan.—We published last week a very interesting report from Dr. Henry B. Baker, Secretary of the State Board of Health of Michigan, on the epidemic prevailing at Ironwood. The following associated press dispatches show the tension prevailing:

ISHPEMING, Mich., July 8.—[Special.]—The board of health at Ironwood will officially advise all who can do so to leave the city for the summer. New cases of typhoid fever are still appearing daily. The water is being hauled to the afflicted city, even from Milwaukee. One hundred families are already dependent on charity, and as the city funds are exhausted and the county poor fund is empty, private charity is alone keeping many from starvation.

IRONWOOD, Mich., July 8.—Supt. S. A. Strouther of the Ironwood Water-Works company is under arrest at Hurley, Wis., just across the State line. Requisition papers have been issued. He will be taken to Bessemer for safety, as threats are openly made here to lynch him. He is considered responsible for the present fearful epidemic of typhoid fever. The mines are closed down here because of the violent epidemic raging, and there is no money for the relief of hungry hundreds.

Yellow Fever in Brazil and Colombia.—The brig Odorilla arrived at Philadelphia, July 10, from Santos. Capt. Holland alone of the original crew of eight survived the yellow fever. Thousands there died of the disease. Forty-five vessels are in the Santos river without crews. The local banks are closed, all the employes having died. The members of the firm, consignees of the Odorilla, have nearly all died. Charles Wadsworth, the American Vice-Consul, also died. Capt. Holland believes the port will soon be depopulated. The patients die more rapidly than their bodies can be disposed of.

NEW YORK, July 9.—A German named Woll, who has just returned from the United States of Colombia, tells a harrowing tale of suffering and wrong. He said that last March he and about 250 Germans, Swedes, Irishmen and Poles were engaged to work on the Magdalena and Carthagena railroad in Colombia. Their passage was to be paid by the railroad company, and if they worked six months the company would pay also their passage back. When they got to the place where the railroad was being built they found the land swampy, and many of them were soon ill with yellow fever and other diseases. The company gave them no medical aid, and they had to take care of one

another. When they asked to be sent back to this country they were told that they had not kept their compact to work six months. Woll says that over 100 of the men died within a short time and that of the entire number only sixty-five lived to return north.

Holmes' Country Life. Pittsfield, His Country Estate, was the Bequest of Ancestors.—I was curious to know about Dr. Holmes' experience of country life, he knows all nature's processes so well, writes Edward Everett Hale in *McClure's Magazine*. So he told me how it happened that he went to Pittsfield. It seems that a century and a half ago his ancestor, Jacob Wendell, had a royal grant for the whole township there, with some small exceptions, perhaps. The place was at first called Pontoosoc, then Wendelltown, and only afterward got the name of Pittsfield from William Pitt. One part of the Wendell property descended to Dr. Holmes' mother. When he had once seen it he was struck with its beauty and fitness for a country home, and asked her that he might have it for his own. It was there that he built a house in which he lived for eight or nine years. He said that the Housatonic winds backwards and forwards through it, so that to go from one end of the estate to the other in a straight line required the crossing it seven times. Here his children grew up, and he and they were enlivened anew every year by lomg summer days there.

He was most interesting and animated as he spoke of the vigor of life and work and poetical composition which come from being in the open air and living in the country. He wrote, at the request of the neighborhood, his poem of "The Ploughman," to be read at a cattle-show in Pittsfield. "And when I came to read it afterwards I said, 'Here it is! Here is open air life, here is what breathing the mountain air and living in the midst of nature does for a man!' And I want to read you now a piece of that poem, because it contained a prophecy." And while he was looking for the verses, he said, in the vein of the Autocrat, "Nobody knows but a man's self how many good things he has done."

Medical Society of New Jersey. Circular on Asiatic Cholera.—The Medical Society of New Jersey at its 127th annual meeting, June 27, 1893, ordered to be printed the following outline of essential points to be observed and emphasized by the physicians in times of threatened invasions of cholera, as presented by Dr. D. C. English, chairman, in the report of the Standing Committee:

TO PREVENT THE INTRODUCTION OF CHOLERA INTO A COMMUNITY.

1. Inquire into the sanitary administration in your community and give your most energetic efforts to secure its improvement.
2. Obtain the services of men of sterling character and superior executive ability as members of your Board of Health.
3. Require frequent inspections and scrupulous cleanliness of all places, public and private, particularly every street and alley; every sewer, drain, cesspool, vault and pit; every dwelling, store and office, including the plumbing; every yard, out-house and stable.
4. Cause all surface wells to be examined and close up those that are found to be polluted.
5. Establish or perfect a system for the daily removal and safe disposal, by fire if possible, of all garbage, sweepings, rags and other domestic refuse.
6. Be prepared to skillfully and effectually disinfect, at public expense, all infected persons, clothing, baggage, vehicles and premises. Cause a supply of standard disinfectants to be kept ready for use by the health authorities.
7. Exclude from the markets all unwholesome food.
8. Provide and keep in readiness a suitable hospital for communicable diseases, and make engagements with physicians and attendants in anticipation of the need of their services.
9. Instruct the people in regard to the nature of the disease; its mode of communicability; the value of thorough sanitation; how to live; what to eat; the importance of using recently cooked foods; the necessity of boiling drinking water; the uselessness of deodorizers and the benefit to be derived from a liberal use of soap and water, and from pure air and sunshine.
10. Prevent the entrance of infected persons and effects into your community. Isolate every "suspect." Keep ready for reference Circular 45 of the New Jersey State Board of Health.

To arrest its spread after its first appearance in the community:

1. Provide competent employes to carry out rules and directions of physicians and board of health.
2. Promptly and completely isolate all cases of the disease, and also all "suspects."
3. Watch all apparently innocent diarrhœas.
4. Thoroughly disinfect all choleraic discharges from patients before emptying into place of deposit. Completely disinfect all vessels, clothing, bedding and everything used by the infected person or in the sick room or house. Burn all garments and articles which are soiled by contact with the discharges.
5. In case of death of patient wrap the body in a sheet or blanket which is saturated with a solution of bichloride of mercury, 1 to 500, and pack the coffin full of quicklime. Bury the body privately, with no attendants except those necessary to insure proper burial at least five feet below the ground surface.
6. Give information to the public as to the existence and progress of the disease. Discourage popular fear. Provide free medical service for the poor and have it promptly rendered. Urge upon the people the greatest care in the selection of digestible food and its proper preparation by cooking; present the danger from the use of unboiled water; the advantage of avoiding all excesses. Especially urge upon the people the observance of the strictest cleanliness of person and surroundings.

An excellent paper on "Quarantine of Cholera" was also presented by William Elmer, M.D., of Trenton, N.J.

The Plague at the Holy City. Mecca a most Serious Menace to the Health of the World.—New York *Tribune:* The epidemic of cholera at Mecca is making steady progress. A fortnight ago the deaths daily were counted by dozens. A week ago they numbered hundreds. Now they have reached the thousand mark. How much further the roll is to be swelled depends chiefly upon the number of pilgrims who remain in the stricken city. The local authorities can do nothing to stay the pestilence. It must rage until the population is decimated, and then subside like a fire that burns itself out. That has been the record of former epidemics, and there is no ground for hoping any other result in the present case. The root of the evil lies not so much in natural conditions as in ignorance and fanaticism.

Although Mecca lies in a valley with poor facilities for drainage and in a torrid climate it might, under proper administration, be made fairly salubrious. The soil is light and dry, the streets are of good width, and the water supply, brought from afar through a fine aqueduct, is pure and abundant. There is, however, not a sewer nor even a well-constructed surface drain in the city, nor are any of the houses properly equipped with plumbing or other sanitary device. Sewage and offal are simply discharged into open pits in the middle of the streets there to reek, ferment and poison the soil and air. At ordinary times, with the normal population of about 50,000, the place is foul. But when in Zu'l Hija, the pilgrimage month, 50,000 to 80,000 visitors are in the city, from all parts of the Moslem world, the majority of them living in the streets, it becomes indescribably vile.

Even these conditions, bad as they are, would scarcely make the place the plague spot that it is were it not for the religious fanaticism of the pilgrims. Not only does every Mohammedan seek once to visit Mecca, but when there he drinks from the holy well of ZemZem or Hagar's well. This is the only well remaining in use in the city, all others having been abandoned at the opening of the aqueduct. Its water is believed by the faithful to possess miraculous qualities, and perhaps it does. But the miracle is one of vice, and not of virtue. A careful analysis of the water, made last year, shows it to be so contaminated by drainage from the cesspools in the streets as to be a rank poison. Compared with it the water supply of London is a model of purity. Thus, while the water of London contains eighteen grains of solid matter in the gallon, that of Hagar's well has more than 225 grains; and while the former has no

nitrites and only a trace of nitrates, the latter has four and a half grains of the two combined. Other impurities, more or less noxious, abound in the water at all times, and it is evident that when, as at present, thousands of pilgrims are thronging about the well, with many sick and dying of cholera among them, it becomes as active and deadly a disseminator of disease as ingenuity could devise.

Now Mecca is the holy city of Islam, and none but followers of the Prophet are permitted even to visit it. No European power can exercise the least authority over it, save through violent invasion of the rights of a sovereign State. But it seems to be at least an open question whether such invasion would not be justifiable, in the name of the common welfare of humanity. These pilgrims do not belong alone to Mohammedan countries. Many are from the dominions of Great Britain, of France and of Italy, and not a few return home bearing thither the deadly infection acquired at Mecca. The sanitary state of the holy city thus becomes a matter of international concern, and common sense seems to dictate that some vigorous steps should be taken in relation thereto. If the powers of Europe can not compel the Sultan to make the city sanitary, surely they can lay a rigorous embargo on pilgrimages thither from their own territory. In the absence of such an embargo of the strictest character Mecca, through its intercourse with the countries belting the Mediterranean, is a most serious menace to the health of the world.

International Sanitary Conference.—The *Journal de Medicine*, Paris, June 25, says that the International Sanitary Conference on the measures to be taken against cholera, will be held late in the autumn in Paris, to examine questions relative to the oriental countries.

Honors to Vienna Physicians.—Doctor Kaposi has been named as an officer of the Legion of Honor.

Doctor Riehl has been named as Chevalier of the Legion of Honor.

Cholera Makes Awful Ravages.—London July 3. Seventy-six persons are reported to have died of cholera in Jeddah Saturday and 440 in Mecca. The total mortality among Mecca pilgrims since June 1 exceeds 5,000.

Bellicose Quatier Latin.—The Parisian students to the number of 2,000, marched in procession before the house of Senator Berenger, and derided him. The police attempted to drive them away, some policemen, and one student named Nuger, was killed. The students became enraged, dispersed the police, broke the windows in the Palais de Justice and smashed street lamps. The cavalry was called (mounted Gen d' Armes) and the students again were successful, repulsing them and beating them with their own swords. The regular troops were called before whom the students quickly dispersed.

Can not Evade Quarantine.—Cario, July 6. Troops are leaving here to form a cordon on the banks of the Suez canal for the purpose of intercepting pilgrims who may try to evade the quarantine.

A Precious Drug.—A drug is used in New China which in actual value far surpasses anything which has been known in other lands. The substance in question is ginseng, the root of Aralia quinquefolia. It is so highly valued as a tonic and stimulant medicine in China that it is sold at from 20 to 250 times its weight in solid silver; sometimes for 500 times that amount. It possesses no important medicinal properties. Next to China the drug is produced in good quality in Corea, and is the principal article of export from Corea to China. So much is this the case that the Coreans are loath to part with any seeds of the plant, lest their practical monopoly in this root should be invaded.

Instance of Longevity.—James McMullen, the oldest man in Kentucky, died near Bardwell, July 9, at the age of 117. He was born in Virginia in 1776.

Anecdote of Sir James Paget.—The recent Derby day in England brought out the usual annual crop of Derby day anecdotes. The *Westminster Gazette* tells the following about Sir James Paget, and the famous horse jockey, Archer:

"Archer on one occasion was savaged on Newmarket Heath by Muley Edris, a horse belonging to Lord Falmouth and Mr. Bromhead. Archer being quite severely wounded consulted Sir James and the eminent surgeon, having bound up the wound, the jockey asked how long it would take to heal. 'Oh,' said Sir James, 'I think in three or four weeks you will be all right.' 'But shall I be fit for the Derby?' asked Archer. 'Ye-es,' was the reply. 'Oh, yes! I think you may *go to the Derby*.' 'No, but you don't quite understand me,' persisted the jockey; "I mean, shall I be fit to *ride?*" 'Well, I don't know,' was the answer. 'Better *drive; better drive!*' Archer, rather taken back by this very innocent and unexpected rejoinder, had to explain, 'I am afraid, Sir James, you scarcely realize who I am?' 'No,' said the surgeon politely, referring to the patient's visiting card, 'I see I have the honor of receiving Mr. Archer, but—' 'Well,' said Archer, 'I suppose I may say that what you are in your profession, Sir James, I am in mine.' Then he proceeded to tell him what that profession was. The surgeon, on learning the status of his visitor was at once interested, and asked him many questions; among others, what would be his loss supposing he would be unable to fulfill the Derby engagement, to which Archer replied, 'About £1,000, per haps more.' His average annual income he stated to b about £8,000 or £10,000, upon which Sir James is said to hav remarked, 'You may well say that what I am in my profes sion you are in your line; but I only wish that my profes sion was half as profitable as yours.'"

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Two Weeks ending July 8, 1893.

James S. Leys, commissioned an Asst. Surgeon in the Navy.

Medical Director G. S. Beardsley, detached from Navy Yard, Washington, D. C.

Medical Inspector C. H. White, detached from Smithsonian Institution.

Surgeon John C. Wise, ordered to Navy Yard, Washington, D. C.

Surgeon C. U. Gravatt, ordered to the Smithsonian Institution.

Asst. Surgeon C. D. W. Brownell, detached from U. S. S. "Newark," and granted sick leave.

Asst. Surgeon S. G. Evans, ordered to the receiving ship "St. Louis."

P. A. Surgeon C. W. Rush, ordered before Retiring Board.

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